Improving the Use of the Nursing Process: The Impact of a Charting Methodology Developed from King's Conceptual Framework on the Use of the Nursing Process

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ABSTRACT

The purpose of this study was to assess the effects of changing a nursing documentation system, developed from King's Conceptual Framework, on the use of the nursing process. The null hypothesis was that there would be no significant increase in the reflection of the use of the nursing process on the nursing care plan or nurses' notes, as a result of using a nursing documentation system developed using King's Conceptual Framework (1981).

The design involved the development of a questionnaire that was used to review health records pre and post implementation of a documentation system developed based on King's Conceptual Framework and Theory of Goal Attainment (1981). A Record Completeness Score was obtained from some of the questions. The null hypothesis was rejected.

The results of the study have implications for nursing administration and the evaluation of nursing practice. If the use of a documentation system developed from a conceptual framework increases the reflection of the nursing process on the patient's health record, nursing will have the means to measure

patient outcomes/goal attainment.

All health care organizations and levels of government are focusing on methods to monitor and control the health-care dollar. In order for nursing to clearly determine the costs associated with nursing care, measurement of patient outcomes/goal attainment will need to be possible. In order to measure patient outcomes/goals attainment nurses will need to be able to collect data on their practice. It will be critical that nursing have a documentation system in place which facilitates the reflection of the nursing process within a theoretical framework.

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CHAPTER ONE: THE PROBLEM

Introduction

The Departments of Nursing at the Hamilton Civic Hospital adopted King's Theory and Conceptual Framework (1981) as a basis for nursing practice. According to Bryne-Coker, Fradley, Harris, Tomarchio, Chan, and Caron (1990), "conceptual frameworks for nursing...hold immense promise for the further development of nursing's scientific base" (p. 107). The role of the researcher was to coordinate the implementation of King's Theory (1981) into nursing practice, which was called the King Project.

On reviewing the literature on nursing theories there was very little that outlined how the theory being used is actually reflected in the documentation practices of nurses. King (1993) identifies that "because it is abstract, theory per se cannot be directly applied in nursing practice. What is applied is the knowledge of the concepts of the theory and knowledge resulting from research about the theory" (p.

21). King further identifies that the "concepts of theory have served as the knowledge base for using the nursing processes of assessing, planning, implementing, and evaluating nursing care" (p.23).

When considering how to integrate King's Conceptual Framework (1981) into nursing practice several issues were raised. Where does one start? How can one give meaning to the use of the concepts from nursing theories, so that nurses reflect the adoption of the thinking of the theorist?

The researcher believed that for the integration of nursing theories into practice a pragmatic approach was needed. The one area of nursing that was practiced by all nurses regardless of where they work or what they did was **documentation.** It did not matter where the Department of Nursing was in terms of technology or educational resources, all nursing care must be documented for professional and legal accountability. This study looked at the link between theory and practice, specifically documentation of the nursing process on the Nurses' Notes and Nursing Care Plan using the concepts from King's Conceptual Framework (1981).

The nursing process is a decision-making model used by nursing staff to plan and deliver nursing care. The nursing process is divided into four steps: assessment, which includes nursing diagnosis; planning; implementing; and evaluating. The use of the nursing process is usually reflected on a written Nursing Care Plan which outlines the goals for the patient along with the interventions/actions that would be used to meet those goals. Progress toward meeting the patient's goals is then reflected in the Nurses' Notes on a daily basis.

Nursing Diagnosis is part of the nursing process and is a clinical judgment made by the nurse about the patient's needs based on assessment data from the patient. Nursing Diagnosis identifies the probable cause and the signs and symptoms exhibited by the patient that indicate there is a problem. Alfaro (1990) identifies the three parts of Nursing Diagnosis as being comprised of a PES statement: the problem (P), the etiology (E), and the signs and symptoms (S).

The mandate of the College of Nurses of Ontario is to protect the public. They accomplish this by identifying the minimum standards of practice for Registered Nurses and Registered Nursing

Assistants/Registered Practical Nurses. The College communicates the minimum standards of practice through a booklet entitled Standards of Nursing Practice for Registered Nurses and Registered Nursing Assistants. The College mails out revised standards to all registrants when they are developed. Therefore, all nurses are familiar with the minimum expectations regarding their practice.

The College of Nurses of Ontario in their 1991 Standards of Nursing Practice have identified that all Registered Nurses are expected to incorporate Nursing Diagnosis into the nursing process. The use of the nursing process as a decision-making model has been a minimum standard of practice since the late 1970s and its use has been reflected in the development of a written Nursing Care Plan. Fischbach (1991) describes the nursing process:

> as a term used to describe the sum of the distinctly separate yet interrelated activities of nursing practice. Assessment, planning, diagnosis, implementation, and evaluation are the key components of the nursing process. These components provide an effective means to describe the integral

> activities of nursing practice. The nursing process represents the application of the scientific method of problem solving to the practice of nursing. (p. 111)

Statement of the Problem

In practice, the nursing process is usually integrated into the tools used for nursing documentation. Prior to the King Project nurses assessed their patients using a standardized Nursing Assessment Form, and then identified nursing diagnoses applicable to the patient and wrote the diagnoses on a Nursing Care Plan. The nurse then documented the daily care of the patient on the Nurses' Notes. However, the information recorded on the Nurses' Notes was seldom related to the Nursing Care Plan. Although the tools were available nursing staff were not reflecting the use of the nursing process in their daily documentation of a patient's care.

This study examined the use of the nursing process, including nursing diagnosis, in an acute care hospital setting. It describes a documentation method and the tools used that would facilitate the use of the

nursing process and nursing diagnosis. This documentation system included a Nursing Assessment Form which incorporated the concepts from King's Conceptual Framework (King, 1981), a Nursing Care Plan that included nursing diagnosis, goals, interventions, evaluation, and Nurses' Notes which used a S.O.G.I.E. (S=subjective data; O=objective data; G=goal; I=interventions; E=evaluation) format (Vaillancourt, 1990). This documentation system and tools were developed based on King's Theory of Goal Attainment and Conceptual Framework (1981).

The researcher believed the change in the documentation system would facilitate the use of the nursing process and nursing diagnosis by nursing staff in their daily documentation of patient care. Within this context the following questions emerge:

1) Is there a relationship between documentation on the Nursing Assessment Form, Nursing Care Plan and the Nurses' Notes?

2) Does this relationship change with the introduction of a documentation system developed using concepts from King's Conceptual Framework (1981)?

3) Is the relationship between the Nursing

Assessment Form, Nursing Care Plan and Nurses' Notes more congruent with the introduction of a documentation system developed using concepts from King's Conceptual Framework (1981)?

Rationale for the Study

Despite the fact that the use of the nursing process is a minimum requirement of practice for nurses, by the College of Nurses (1976), it is well documented that nurses continue to be resistant to its use. Johnson and Hales (1989) identified that "nurses resist using nursing diagnosis as they often have difficulty applying the abstract nature of the process to clinical practice" (p.31). Nurses see the development of Nursing Care Plans as paper exercises, because care plans are generally developed and not integrated into the Nurses' Notes. Each hospital develops its own nursing documentation system based on general guidelines for charting that have been distributed by the College of Nurses (1991). However, the guidelines from the College of Nurses do not specify the exact forms to be used or the mechanics behind how the connection is to be made between the

nursing process and nursing documentation.

As nurses struggle with cutbacks in staffing, their focus turns to the tasks that must be done so that an incident report can be avoided. In hospitals if a nurse does not complete a task such as changing dressings, hanging intravenous solutions or giving medication she/he is required to fill out an incident report in which an explanation as to why the "error" occurred is included. A nurse does not have to fill out an incident report if he/she does not develop a Nursing Care Plan and document towards it. Nursing staff continually complain that they have "too much paper work, and I just want to spend time with my patients" indicating a view that the paper work is an adjunct rather than part of their nursing practice. Information about the patient is communicated on a daily basis to various health care professionals in a variety of modes. Nurses communicate to one another from shift to shift by tape recording their reports. Members of the multidisciplinary team also communicate verbally when they see one another, or they leave each other notes. Often a clipboard is used to record questions for physicians. The researcher's own 20 years in practice have shown her that other members of

the multidisciplinary team seldom read the Nurses' Notes; rather they expect nurses to verbally relate information about the patient to them. Therefore, the lack of documentation only becomes an issue when someone needs to retrospectively look for some information, such as a lawyer preparing for trial or a researcher collecting data. Perhaps part of the reason for this is related to the difficulty in locating information in the Nurses' Notes. It is much easier just to ask which is less reliable if the information is not passed on.

The use of the nursing process reflected in the development of Nursing Care Plans is not a new concept and was first reflected in the College of Nurses of Ontario professional standards in the late 1970s. The nursing process has also been taught in all Schools of Nursing both at the College and University level for over two decades. Actually, Fischbach (1991) identifies that the term "`nursing process' was first used by Lydia Hall in 1955" (p. 112). After 30 years, nursing process and its reflection in nursing practice continue to be of concern for professional accountability and legal reasons. Fischbach (1991 further identifies that:

> Today, efforts continue toward further defining the nursing process...The nursing process is evolving and there is need for continued interpretation by nurses. Through the use of the nursing process and the efforts that are made to further refine it, the interpersonal, intellectual, and scientific aspects of the nursing profession are being advanced. (p. 112)

Behavioral changes occur as a result of reinforcement for behaviors. Most Nurse Managers have either made or heard this statement at some point in their career: "We always did it this way before and things were fine." There is seldom a reason a person would change his/her behavior unless there is a reward or reinforcement for doing so. As a result of reinforcing a different behavior, attitudes and values will change. Hoy and Miskel (1982) identified Skinner as stating that:

> Behavior has consequences that may either increase or decrease the probability that it will occur again... speculation about feelings, thoughts, or other internal processes as causes of behavior is unnecessary and misleading...

> environmental conditions--for example, reinforcement or punishment--influence internal responses as well as overt behavior. Thus, inner states are considered effects rather than causes. (p. 166)

The nurse on a busy medical/surgical area, or any area for that matter, needs to believe and value the purpose of her/his actions in order to feel motivated to carry it out. Behavior that is not perceived as meaningful is less likely to be performed than behavior that is perceived as having a purpose. If the behavior has meaning it is reinforced by the task being completed with ease and is, therefore, more likely to be repeated and valued. Fullan (1982) identified that "for implementation to gather any momentum, teachers and others must experience some sense of meaning and practicality relatively early in the process of attempting change; otherwise they will eventually abandon the effort" (p. 62).

Since the College of Nurses of Ontario (1989) identifies the development of care plans as a minimum expectation, hospitals have nursing policies which state that a care plan is to be developed when a patient is admitted. At the Hamilton Civic Hospitals

the Nurses' Notes have been a permanent part of the patient's health record for a number of years; however, the Nursing Care Plan has not. This meant that when a patient was discharged from hospital the Nursing Care Plan was destroyed. The Nursing Care Plan became a permanent part of the patient's health record in 1991 when the nursing staff was educated on the development of nursing diagnosis. This indicated an increased value for the Nursing Care Plan by hospital administration. However, the researcher does not believe this was a major influence in the nurses' use of the Nursing Care Plan as nurses quite diligently used other forms that were not a permanent part of the patient's record.

This study describes a documentation system that enhances the relationship among Nursing Assessment, Nursing Care Planning, Nurses' Notes and the nursing process.

Definition of Terms

Registered Nurse is an individual who has graduated from a school of nursing, College or University and is registered with the College of Nurses

of Ontario as a Registered Nurse. This education may have involved two or more years or education. Non-registered nurses are individuals who have graduated from a College, University or School of Nursing but have not completed the exams necessary to registered with the College of Nurses. Non-registered nurses are expected to function within the Standards of Practice established by the College of Nurses of Ontario.

Registered Practical Nurse is an individual who has graduated from a School of Nursing or College, and is registered with the College of Nurses of Ontario as a Registered Practical Nurse formally known as a Registered Nursing Assistant. This education may have involved anywhere from 9-12 months of education.

Nurse will be used through the study to define an individual who is expected to use the nursing process in his/her documentation practices. This will include both Registered Nurses/Non Registered Nurses and Registered Practical Nurses.

Nursing Process is defined by Marriner (1975) as:

> the application of scientific problem solving to nursing care. It is used to identify patient problems, to systematically plan and implement nursing care, and to evaluate the

> results of that care...the steps of the nursing process are classified as (1) assessment, (2) planning, (3) implementation, and (4) evaluation. (p.1)

Alfaro (1990) defines the nursing process as:

> an organized, systematic method of giving individualized nursing care that focuses upon identifying and treating unique responses of individuals or groups to actual or potential alteration in health. It consists of five steps--assessment, diagnosis, planning, implementation, and evaluation--during which the nurse performs deliberate activities to achieve the ultimate goals of nursing.(p. 2)

Nursing Care Plan is defined by Mayers (1972) as "an abstract data concerning a specific patient - data which is organized in a concise and systematic manner, which facilitates overall medical and nursing goals, and which clearly communicates the nature of the patient's problems and the nature of the related medical and nursing orders" (p. 13).

Nursing Diagnosis is defined by Alfaro (1990) as "an actual or potential health problem that focuses upon the holistic (human) response of an individual or

group, and that nurses are responsible and accountable for identifying and treating independently" (p. 54).

Nurses' Notes/Progress Notes are records that are used exclusively by nursing staff to document the care they have given to a patient.

S.O.G.I.E. is a method of charting developed by Vaillancourt (1990) that includes subjective data, objective data, goal identification, interventions of nursing actions, and evaluation of goal attainment which is a measure of the effectiveness of nursing care. This method of charting was developed based on concepts from King's Conceptual Framework (1981).

Patient's Health Record is the cumulation of records that are kept by the employing agency on the care that a patient receives. These records are used for legal or research purposes once the patient is discharged from the hospital. These records are kept by the employing agency for 20 years or for five years after the patient's death. Patient's Health Record will also be referred to as chart.

Standards of Practice are developed by the College of Nurses of Ontario (1990) and identify what the "minimum expectations are for providing safe, effective and ethical nursing care" (p. 5).

Minimum Expectations are identified by the College of Nurses of Ontario (1990) as the basic requirements for competence for all Registered Nurses and Registered Nursing Assistants. The expectations apply to every practice setting and provide a "yardstick" for a basic level of safe practice across the province of Ontario (p. 5).

Conceptual Framework/Model is defined by Meleis (1985) as a "set of discrete concepts that are not as interrelated and linked in sets of propositions as we expect from theory" (p.95). The concepts from conceptual frameworks can be used to collect and organize data. Griffith and Christensen (1982) identified that the "differences between models, frameworks, and theory are related to their levels of abstraction, degree of explication, and the level of theory development. Conceptual models and theoretical frameworks usually precede and coexist with theory" (p. 9).

Nurse Clinician is a Registered Nurse who has a Bachelors Degree in nursing or another field and/or has demonstrated expert clinical skills in a particular area. In this study Nurse Clinicians worked on a particular unit within the hospital and were responsible

for all educational sessions that relate to that unit.

Unit is a term used to identify one particular nursing area within the hospital setting (e.g., Medical Unit, Surgical Unit, Intensive Care Unit).

King Preceptors were nursing staff who voluntarily agreed to act as mentors on their units. They received the same educational session as the Nurse Managers and Nurse Clinicians.

King Project is a term used to describe a project that was initiated by the Departments of Nursing of the Hamilton Civic Hospitals in 1987. The purpose of the project was to introduce a conceptual framework to nursing practice within the Departments of Nursing. After a careful review of several theorists King's Conceptual Framework was selected. The project involved several committees and included the participation of many nursing staff in the review and revision of the nursing documentation system.

Limitations and Assumptions

The focus of this study dealt with only one aspect of nursing practice, namely documentation. This makes the scope of the study narrow in that it dealt with the

use of the nursing process at a behavioral level and did not look at cognitive and affective processes. Of course the assumption can be made that if the behavior was present and nurses demonstrated an increased reflection of the nursing process in their documentation, they must have a better understanding of the process and actually value its use. However, it was not the intent of this study to make these assumptions. Further information would need to be gathered through personal interviews with the nurses in order to determine the validity of such an assumption.

The scope of the study was limited to two hospitals within the province and one documentation system, therefore generalizations on a global level should be restricted until further studies can be conducted.

The population was limited in size as the study involved only two hospitals.

The research questionnaire was a limitation in that it was not formally piloted prior to the study and therefore does not have established reliability and validity.

The following assumptions have been made:

1) Registered Nurses are knowledgeable about nursing diagnoses.
2) Registered Nurses/Non Registered Nurses and Registered Practical Nurses have received education in the decision-making model of the nursing process during their nursing education.
3) Registered Nurses and Registered Practical Nurses are knowledgeable about the minimum expectations established by the College of Nurses of Ontario regarding the use of the nursing process and their responsibility with regard to documentation.

Outline Of The Remainder Of The Study

Chapter Two reviews the literature that supports that there was little in the way of quantitative research that looks at the reflection of the nursing processing in nurses' documentation. The literature review then briefly explores King's Conceptual Framework (1981), Roy's Adaptation Model (1984) and Parse's Man-Living-Health Theory (1987) and illustrates

that generally speaking theorists support the use of the nursing process. A review follows of the College of Nurses (1991) Standards of Nursing Practice and the expectation that the nursing process be reflected in nursing documentation. Finally, the components of the nursing process and the changes that were made to the documentation system to reflect both the nursing process and King's Conceptual Framework (1981) are discussed.

Chapter Three addresses the issues of accessibility; instrument development; process of gathering data and the method of data collection.

Chapter Four outlines the analysis and evaluation of results.

Chapter Five addresses the discussion and recommendations.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

Kostopoulous (1988) identifies that "although nursing literature has included much on performance evaluation, the emphasis has been on evaluation of students" (p. 78). Kostopoulous further identifies that "there has also been much written on the evaluation of nursing care from both the process and outcome viewpoints that is, quality assurance. But there is comparatively little written about the comprehensive evaluation of employee performance and about methods of evaluation that have been tested for reliability and validity" (p. 78).

Krumme (1988) identifies that although schools of nursing incorporate the nursing process into their curriculum "no mention is made of tested instruments developed by faculty around which to evaluate students' nursing process competencies" (p. 255). Krumme (1988) also states that "to date...no instrument has been reported in the literature that uses nursing diagnoses as the framework around which to measure the nursing process competencies outlined in the profession's standards...the research that has been conducted to

date has focused primarily on making the nursing diagnosis itself" (p. 257). Krumme further conveys that "relatively few attempts to measure nursing process competencies of baccalaureate students or practicing nurses against objective and valid criteria, using criterion-referenced measurement tools, have been reported in the literature" (p. 258).

Krumme (1988) reports a study conducted in the 1970s by Carter et al. that focused on whether or not nursing staff in the clinical areas assessed, planned, implemented nursing actions and evaluated nursing care based on 21 nursing problems that were developed by Abdellah in 1960. For example, did the nurse use the nursing process in response to the patient's hygiene needs? Krumme (1988) further reports a study conducted by Haussman & Hegyvary in 1976 that included the review "of 257 items organized around the following nursing process framework for patients requiring self-, partial, complete or intensive care: 1) A plan of nursing care is formulated, 2) Physical needs are attended, 3) Nonphysical needs are attended, 4) Nursing care objectives are evaluated" (p. 262). This information addresses whether specific data are collected by reviewing patient records, interviews and

observations and does not identify whether the use of the nursing process is evident in the patient's health record. These would be valuable follow up tools to use once it was established that the nurse was using the nursing process.

Brunt (1990) identifies while developing a documentation system for a 670-bed hospital that "the literature reinforced the need to integrate forms with nursing process, streamline documentation, involve nursing personnel in the planning phase, and use principles of change theory in the implementation phase" (p.22).

Worthy and Siegrist-Mueller (1992) identify that prior to initiating any changes in their hospital's documentation system "a literature search yielded many articles about both the 'care planning process' and 'different styles of documentation,' but none of them effectively integrated these two concepts" (p. 68). Worthy and Siegrist-Mueller further state that the American Standards of Nursing Practice "explicitly state that nursing documentation must show evidence of the nursing process from admission to discharge" (p. 68).

While investigating the use of a Nursing Care

Plan with perioperative nursing Chana (1992) states in her conclusion that "completed care plans provide evidence of the nursing process...a good care plan incorporates standards of practice and of care and can be individualized...it is important to continually evaluate and revise care plans to ensure that they meet changing patient needs" (p. 1235).

DiBlasi and Savage (1992) in reviewing their hospital's documentation system stated that "the current documentation system was fragmented and did not consistently demonstrate the assessment phase of the nursing process, nor did it always provide information regarding the client's progress or lack of progress toward goals" (p. 27). The review of their documentation system further identified that "care plans did not always reflect the client's changing condition or use of nursing process on an ongoing basis" (p. 27). In the development of nursing forms they identified that "the previous admission assessment form was primarily a data collection tool and, as a result, did not facilitate the development of an individualized plan of care" (p.28). The change they made in "format not only facilitated a more comprehensive assessment but also provided a mechanism

whereby nursing diagnoses are more readily identified" (p. 28). In the evaluation of their revitalized documentation system they "enabled the nursing staff to implement professional nursing standards more efficiently...information on the client's response to nursing interventions is more accessible, and it is easier to see the client's progress" (p. 29). It is not clear in the article how this evaluation was conducted and there is no evidence of any quantitative data.

Edelstein (1990) identifies that:

> Since the courts now are holding nurses liable for their own actions, and because as many as one out of four malpractice suits are decided from the patient's chart, the nursing record must be completed in a clear and logical manner...lawyers suggest that nursing notes should describe all care given to patients...accrediting agencies specify that Nurses' Notes must reflect the nursing process. (p. 40)

Edelstein while reviewing patient charts discovered that:

> Sixty-four percent of the progress notes lack

> evidence of completed process...the results suggest that nurses do not always document nursing process...If a good care plan is written--patient problems identified, realistic and measurable goals for patient and family stated and nursing interventions to meet patient/family goals identified--the nurses' notes practically write themselves. (p. 40-44)

Gross and Andrea (1991) identify that "the nursing literature is replete with articles addressing the importance of nursing diagnosis and the nursing process. However, information in the literature related to developing and implementing functional documentation systems to reflect nursing diagnosis and the nursing process is notably absent" (p. 173).

Gross and Andrea (1991) while reviewing their hospital documentation system identify that "nurses within the emergency department were unable to confidently and fluently articulate their use of the nursing process in everyday practice. Nurses also found it difficult to demonstrate integration and use of the nursing process through existing patient documentation systems" (p. 173). In evaluation of

their revised nursing documentation system they stated that "nurses display greater understanding of nursing diagnoses and of the nursing process" (p. 176). The authors identify that "three formal mechanisms and one informal mechanism were used to evaluate the success of the new documentation system. Formal quality assurance audits were conducted to assess documentation compliance" (p. 176). However, there were no quantitative data included in the article.

Miller and Pastorino (1990) in a review of their hospital's documentation system identified that "there was little evidence of nursing process in daily notes, especially in the evaluative phase" (p. 47). When evaluating their new documentation system they found that the "new daily nursing record has proved a quick, easy and consistent format for charting daily nursing assessments and care, as well as for the emphasizing of nursing contributions to patient care via the nursing process" (p. 48). The article does not identify how this change was measured as there were no quantitative data included.

Schmidt, Gathers, Stewart, Tyler, Hawkins and Denton (1991) in a review of their hospital's documentation system state it was "evident that the

existing system of nursing documentation did not support the identified patient acuities, nor did it always provide for professional or financial accountability" (p. 50). After changing their documentation system they state that "no charting system can be inclusive of every individual healthcare need. Yet, documentation that addresses standard nursing care needs, coordinates with narrative documentation...and reflects legal, financial and professional accountabilities can be achieved" (p. 52). The authors do not identify how this change was measured and there were no quantitative data included in the article.

Weber (1991) in review of the change in their documentation system comments that an accreditation surveyor "was impressed with the documentation of the nursing process during an audit of the system while it was in a trial phase" (p. 60). There were no quantitative data to support this observation.

> Diers (1981, cited in Weber, 1991) stated that: Nursing is exceedingly complicated work since it involves technical skill, a great deal of formal knowledge, communication ability, use of self, timing, emotional investment, and any other number of qualities. What it also

> involves and what is hidden from the public, is the process of thinking that leads from the knowledge to the skill, from the perception to the action, from the investment to the touch, from the observation to the diagnosis. (p.53)

Conceptual Frameworks And Their Relationship To The Nursing Process

The use of a conceptual framework in nursing is not an innovation, and has received a great deal of attention by nursing scholars over the past 20 years. Fitch and Winslow (1991) identify that:

> The notion of nursing conceptual frameworks is not new in that Florence Nightingale (1859) wrote about the need to have a theoretical basis for nursing practice. The bulk of the literature, however, has appeared since 1952 in the writings of such leaders as Peplau (1952), Orlando (1961,1972), Henderson (1966), Levine (1967,1973), Rogers (1970,1980), Orem (1971,1980,1985), King (1971,1981), Roy

> (1976,1981), Newman (1979), Neuman (1972), and Parse (1981). These authors have described nursing in terms of the four concepts that are central to the practice of nursing - person, environment, health, nursing - and their interactions. Each of the conceptual frameworks is an attempt to explain the practice of nursing and define its boundaries. (p. 23)

Griffith and Christensen (1982) identify that "theoretical approaches in nursing focus on the universal concepts of nursing, health, individual and environment" (p. 9). Theoretical approaches also provide a framework for the collection and organization of data that can be used to assist with the nursing process.

The College of Nurses of Ontario in their revised Standards of Nursing Practice for 1991 identified for the first time that all Registered Nurses are expected to "demonstrate an understanding and analysis of the concepts and relationships between them to nursing, person, health and environment" (p. 15). The College did not identify a specific theoretical approach to be used but rather left that up to the individual health

care agencies and registrants.

The use of conceptual frameworks in practice settings is a recent phenomenom. Fitch et al. (1991) state "there is evidence of the belief that a nursing conceptual framework provides a clear, explicit way of conceptualizing our services to society" (p. 23). The use of conceptual frameworks by Departments of Nursing in practice settings provides a means for collecting data and organizing patient care. Use of a conceptual framework assists a Department of Nursing in review of their philosophy, roles, practices and interactions. Fitch et al. (1991) state that "nursing conceptual frameworks provide a focus for practice, a means of organization for thinking, for observing, and for interpreting what is seen, and a frame of reference with a perspective for viewing the world and what aspects of that world are to be taken into account" (p. 23).

There are several theoretical approaches that have been developed in nursing. Hospitals and Schools of Nursing select a nursing theory based on the approach that best reflects their philosophy of patient care/curriculum development. Schools of Nursing teach several different approaches to students but have

usually selected one approach they use for the development of their curriculum.

Although there are several theoretical approaches, three current theorists will be reviewed using the concepts of health, nursing, environment and individual to identify their major themes. These themes could then be used by the Registered Nurse in the use of the nursing process and development of nursing diagnosis.

Roy's Adaptation Model

Sister Callista Roy's Adaptation Model (1984) of nursing is based on general systems theory and was developed in 1970. Roy (1984) identifies that "persons or adaptive systems interact with the environment and move towards the goal of adaptation and health. The nursing process based on the model influences that movement" (p. 40).

Roy's model (1984) identifies two basic internal processes that the individual uses in adapting. These adaptive processes are called the regulator and the cognator subsystems. Roy states the regulator "receives input from the external environment and from changes in the person's internal state. It then

processes the changes through neural-chemical-endocrine channels to produce responses" (p. 31). With Roy's Adaptation Model

> {the} inputs for the cognator are internal and external stimuli, just as they are for the system as a whole. These inputs vary in intensity and involve psychological and social factors as well as physical and physiological ones, including those that are the output of the regulator mechanisms. These inputs, or changing stimuli, are processed through the various cognitive/emotive pathways. (p. 33)

Roy defines health as "a state or a process of being and becoming an integrated and whole person" (p. 28).

> Roy (1984) identifies that:
> As a scientific discipline, nursing must be accountable for its practice within society. To maintain itself as a needed service, nursing must be able to verify that its practice makes a difference in terms of what is valued by society. The experience of fluctuation in health status is a universal

> phenomenon. Even the most robust of persons will at some time in life experience such fluctuations. It seems accurate to say that most people will also at some time experience difficulty in coping with these changes. (p. 29)

According to the Roy Adaptation Model (1984) of nursing, nursing aims to

> promote this adaptation throughout life. It is a basic assumption of the model that this service is valued by society. Nursing must then validate that it can, in fact, affect a person's adaptation. It can do this only if it can demonstrate by using a scientific approach that nursing activities can change a situation of ineffective behavior into a situation of adaptation. To do this the nurse must assess adaptation, plan care, and evaluate the effectiveness of her approach.
>
> Thus the problem-solving nursing process is required by the person-centered goal of nursing and by the need to verify the service that the nurse provides. (p. 44)

Griffith and Christensen (1982) summarize Roy's

definition of nursing as being "considered as the science and practice of promoting adaptation for holistic functioning of persons through application of the nursing process to affect health positively" (p. 37).

Roy (1984) defines environment as the "internal and external stimuli, or all conditions, circumstances, and influences surrounding, and/or affecting the development and behavior of persons or groups" (p. 28).

Roy (1984) identifies the goal of nursing as "to promote adaptation" (p. 36).

Essentially, with Roy's model the nurse assesses the internal and external environmental stimuli that are affecting the individual and how he/she is adapting to that stimuli. The nurse assists the individual by identifying mutually agreed upon goals that will lead to adaptive responses by the patient. The use of the nursing process with Roy's model would assist the nurse in assessing and reacting to the internal and external environmental stimuli that impact on the patient.

Parse's Man-Living-Health Theory of Nursing

Parse's (1987) theory of nursing is an open system where the individual is exchanging energy with the environment. Parse has developed an explicit framework which provides the nurse with the ability to uncover the meaning of phenomena experienced by people (p. 181).

Griffith and Christensen (1982) identify that Parse also used the existential-phenomenological views of Kierkegaard, Sartre and others. Rader and Gill (1991) outline how Kierkegaard sought to "penetrate behind all masks and false fronts to `that self which one truly is'" (p. 671). Rader and Gill also found it was Kierkegaard who was "convinced that his religious and philosophical mission could be fulfilled only through his own personal experience and not through abstract mental processes" (p. 232). Rader and Gill further identified that what Sartre and Kierkegaard have in common in their thinking is the existentialist view of the individual's need and reality of choice. Rader and Gill state that "Sartre speaks as if every action expresses an individual choice, whereas

Kierkegaard speaks more often of the choice of a way of life, aesthetic or moral or religious" (p. 233). Both agree that individuals are not destined to fate.

Parse (1987) identifies that "the practice of the Man-Living-Health is not congruent with the nursing process as used in most of the nursing literature. The nursing process assumes that the health professional is the authority on health and that the person adapts or can be `fixed,'" (p. 169). In debate of this stance is a quote made by Hall in 1982 (cited in Meleis, 1985):

> In the so-called nursing process there is virtually no content, although it is implied by the process and could be developed. A good process would lead to the development of content that is inseparable from the form. Form and content can be isolated from each other, just as they are in grammar, so that the form can have life without the content. However, it would seem to me that the content cannot have life without the form. That is the purpose of form; it allows the content to be interpreted. (p. 190)

While Parse (1987) indicates the nursing process can be filled with judgments and values of the nurse this is

not necessarily the case. The nursing process is actually the form which the nurse uses to organize the information she/he receives. Parse's framework is the content used to shape the form.

Parse (1987) identifies that the "specific processes inherent in the dimensions" of Man-Living-Health are defined as follows. *"Explicating* is a process of making clear what is appearing through languaging; *Dwelling with* is giving self over to the flow of the struggle in connecting-separating; and *moving beyond* is propelling toward the possibilities in transforming" (p. 169). Parse (1987) states that "the nurse guides individuals and families to relate the meaning of the situation. In telling about the meaning, persons share thoughts and feelings with one another, which in itself changes the meaning of a situation by making it more explicit" (p. 168). This certainly indicates an interaction with the patient and whether this is referred to as assessment or explicating the nurse has a responsibility to document this information for professional and legal accountability. Parse (1987) further states that "the nurse guides individuals and families to plan for the changing of lived health patterns--these patterns

uncovered in the illuminating of meaning, synchronizing of rhythms, and mobilizing of transcendence" (p. 169). It would also be the responsibility of the nurse to document this plan.

Parse (1987) defines Man (individual) as "an open being free to choose meaning in situation" (p. 159). Phillips' (1987) critique of Parse identifies that Parse views Man as an open being who is free to make choices and accept the responsibility for those choices.

Parse (1987) views health "as lived value priorities, a nonlinear entity that cannot be qualified as good, bad, more, or less" (p. 159). The individual's health is a reflection of the value choices the individual has made.

Griffith and Christensen (1982) identify that Parse's nursing focuses on "caring and healing by guiding man/family in choosing among possibilities in changing the health process" (p. 30). "Nursing, rooted in human sciences, focuses on Man as a living unity and Man's qualitative participation with health experiences" (Parse, 1987, p. 4).

Griffith and Christensen (1982) identify Parse's relationship between man and the environment as man

> coparticipating with the environment and freely choosing to live certain values, man coconstitutes by creating meaning with others and the world and cocreates self in becoming. Man lives with predecessors, contemporaries, and successors all at once in coexistence which gives mean to becoming. (p. 30)

Parse (1987) identifies goals as they relate to the evaluation process. "Evaluation is a coconstituted process, one in which a value is given to growth toward a desired goal" (p. 94). The idea that the individual makes choices based on his/her values is what links Parse with existentialism. The use of the nursing process with Parse would reflect the individual choices made by the patient.

Imogene King's Theory of Goal Attainment

King's Goal Attainment (1981) is a general systems theory. King (1993) states von Bertalanffy in 1956 defined a general system theory as a "complex of elements standing in interaction" (pg. 22). King (1981) identifies the personal, interpersonal, and social systems as interacting systems.

King uses the concepts of perception, self, growth and development, body image, time, and space to clarify her personal system. King (1981) related these concepts to the personal system by stating:

> An individual's perceptions of self, of body image, of time and space influence the way he or she responds to persons, objects, and events in his or her life. As individuals grow and develop through the life span, experiences with changes in structure and function of their bodies over time influence their perceptions of self. (p. 19)

King (1981) incorporated nursing into her definition of the interpersonal system. Fawcett (1984) identifies that King's "interpersonal system is composed of two, three, or more individuals, interacting in a given situation" (p. 92). The concepts associated with this system are interaction, communication, transaction, role and stress.

King (1981) defined the social system as "an organized boundary system of social roles, behaviors, and practices developed to maintain values and the mechanisms to regulate the practices and rules" (p. 115). King (1981) includes the concepts of

organization, authority, power, status, and decision making in the social system.

King (1981) identifies the goal of nursing as helping "individuals maintain their health so they can function in their roles" (p. 3). King's concepts can be used to collect data and assess the individual. The concept of perception is central to King's theory. All the other concepts are to be assessed based on both the patient's perception and the nurse's perception. It is the discussion between the nurse and patient that lead to an understanding and clarifying of perceptions. This clarification leads to a mutual understanding about what is important to the patient. The focus of King's theory is that mutual goal setting leads to goal attainment and this interaction would be reflected in the nursing process.

Griffith and Christensen (1982) identify that King views the individual as "open systems, interacting and exchanging matter, energy, and information with the environment" (p. 21).

King (1981) defines the environment as "the internal environment of human beings transforms energy to enable them to adjust to continuous external environmental changes" (p. 5).

King (1981) identifies health as "dynamic life experiences of a human being, which implies continuous adjustment to stressors in the internal and external environment through optimum use of one's resources to achieve maximum potential for daily living" (p. 5).

> King (1981) states that nursing is perceiving, thinking, relating, judging, and acting vis-a-vis the behavior of individuals who come to a nursing situation. A nursing situation is the immediate environment, spatial and temporal reality, in which nurse and client establish a relationship to cope with health states and adjust to changes in activities of daily living if the situation demands adjustment. (p. 2)

Similarities between Roy, Parse and King

All three theorists use different nomenclature to describe their theories. Roy's adaptation to stimuli (1984), Parse's coexisting with others (1987) and King's interacting systems (1981) identify how individuals react/interact with their world.

One common thread is that they all believe and value the idea that individuals have a right to participate in decision making about their care. The value of the individual's perception and participation in decision making is a common theme. Historically, the health care system has focused on control of the care. Physicians prescribe, nurses administer the care directed by the physicians and patients are expected to be passive recipients of that care.

Use of nursing conceptual frameworks is necessary for the practice of nursing to clarify and define its boundaries. Field and Winslow (1985) identified that "nurses must value and use a nursing model if clients are to get the best health care possible and if nursing is to achieve autonomy and control over nursing practice" (p. 1101). The components of the nursing process provide a form which can assist the nurse in collecting data about the patient, planning the patient's care with the patient's participation, implementing nursing actions to achieve the patient's goals and evaluation of whether or not the patient's goals are being achieved.

Meleis (1985) states that "theories describing and explaining the nursing process address effective ways

to assess, diagnose, and intervene in ways congruent with the mission of nursing" (p. 191). While Parse (1987) does not use the terminology of assessing, planning, intervening and evaluating she does identify a process for nurses to follow in their nursing practice.

The researcher believes that the nursing process can be used as an adjunct to nursing theories in enhancing nursing practice.

Literature On Standards Of Nursing Practice

The College of Nurses of Ontario (1991) identifies that the documentation of nursing practice is reflected by using the nursing process and serves several purposes:

1) communicating client health information
2) providing continuity of care
3) demonstrating accountability
4) providing a mechanism for assessing quality assurance
5) facilitating research (p. 3-5).

Historically, nursing documentation has been an important aspect of nursing practice. Fischbach (1991)

quotes Florence Nightingale (1859) as stating the nurse "is at once a careful observer and a clear reporter" (p. 11). Fischbach further identifies that "in the mid-1950s, nursing educators expanded the recommended nursing documentation base. Charting by nurses began to include patients' responses to actual nursing care (emotional as well as physical) and nursing interventions, including patient education" (p. 12). "Legal liability concerns in the 1960s brought vacillations in documentation as nurses attempted to record everything they did--covering `all' nursing actions. As a result, redundant charting entries were common" (p. 12). However, Iyer and Camp (1991) identify that documentation has always been viewed as a time consuming chore. Fischbach further identifies the following problems and changes that have affected documentation requirements:

1) Nurse Practice Act (Standards of Practice)
2) Scope of nursing practice
3) Nursing data and statistics
4) Intensity of nursing care and severity of illness
5) Skilled nursing
6) Consumer use of services

7) Quality assurance and nursing audits

8) Accreditation controls

9) Peer review organizations

10) Coding and classification

11) Prospective payment systems

12) Durable medical equipment

13) Medicare and Medicaid

14) Risk management. (p. 16)

Fischbach states that

> Because of the changes in Nurse Practice Acts, nurses are no longer regarded only as givers of care, but are also seen as managers of care. These changes, along with other revisions in laws and regulations, require that complete descriptions of nursing judgment, implementation, and provision of care be documented in nurses' records as evidence of compliance with standards. (p. 16)

The current Standards of Nursing Practice from the College of Nurses (1991) identify six standards. They are knowledge, professional accountability, assessing, planning, implementing and evaluating.

The standard on professional accountability

clearly reflects that nurses are accountable for their actions.

Included in the College of Nurses of Ontario (1991) standard of assessing are 14 criteria the nurse is expected to perform. Several of these criteria relate to documentation.

Criterion 7 Documents data necessary to:

7.1 identify in general and in detail the client's level of functioning

7.2 identify normal variations in the client's functioning

7.3 identify the client's pattern of functioning, including strengths and weaknesses

7.4 identify health risks and factors contributing to illness

Criterion 12 Documents nursing diagnosis or documents conclusion that client has no need for nursing care.

Criterion 13 Documents and updates all information as soon as

possible without compromising client safety.

Criterion 14 Ensures that documentation is confidential and can be retrieved from recordkeeping systems. (p. 27)

Under the College of Nurses of Ontario (1991) standard of planning there are 12 criteria. The following specifically relate to documentation:

Criterion 5 Contributes to the individualized care plan for each client by documenting:

5.1 the best possible outcome in relation to each nursing diagnosis

5.2 target dates or review dates for achievement

5.3 strategies or interventions

Criterion 7 Confirms that the individualized care plan:

7.1 is congruent with the multidisciplinary plan of care

7.2 reflects priorities

7.3 is stated in realistic and measurable terms

Criterion 11 Documents and updates all information as soon as possible without compromising client safety.

Criterion 12 Ensures that documentation is confidential and can be retrieved from recordkeeping systems. (p. 29-30)

Under the College of Nurses of Ontario (1991) standard of implementing there are 20 criteria. Those that are related to documentation are:

Criterion 17 Documents strategies and interventions.

Criterion 19 Documents and updates all information as soon as possible without compromising client safety.

Criterion 20 Ensures that documentation is confidential and can be retrieved from recordkeeping systems. (p. 39)

The College of Nurses of Ontario (1991) standard

of evaluating has 12 criteria. Those relating to documentation are:

> Criterion 5 Documents and updates all information as soon as possible without compromising client safety.
>
> Criterion 8 Determines and documents modifications to the individualized care plan, to reflect the client's changing needs, or discharges the client from nursing care when he or she no longer needs it.
>
> Criterion 9 Redesigns or modifies the standard care plan, as required. (p. 41-43)

While the previous College of Nurses of Ontario (1989) Standards of Practice were worded differently and not as comprehensive as the current standards, the concept of documentation and the use of the nursing process was a common thread.

The Registered Nurses Association of British Columbia (1990) have similar expectations as the

College of Nurses of Ontario regarding standards of nursing practice and the use of the nursing process. In the Registered Nurses Association of British Columbia Standards of Nursing Practice (1990) the following statements are made:

> The nurse collects data in a manner consistent with the conceptual model for nursing practice chosen...The nurse uses a conceptual model for nursing practice for guidance in determining the nursing diagnoses...The nurse develops a plan of action which is based on the nursing diagnoses...The nurse implements the plan of action in a manner consistent with the direction indicated by the conceptual model chosen...The nurse evaluates all aspects of the nursing care in accordance with the conceptual model chosen for nursing practice. (p. 6-7)

During the Grange Commission, which investigated the deaths of the children at the Sick Children's Hospital in Toronto, the Nurses' Notes were examined with a critical eye. Templeton (1987) states of the Grange Inquiry "while staff shortages and heavy

workload were cited as reasons for poor or absent documentation, officials at the inquiry pointed out that this did not excuse nurses from their professional duty to keep accurate, contemporaneous nurses' notes" (p. 9).

Nurses are often called upon to testify in court cases involving patients with whom they have been in contact. It is not unusual for a case to go to court months or even years after the nurse has actually cared for the patient. The Nurses' Notes may be used to remind the nurse of the events that occurred as well as provide a legal document to support the nurses' care given during contact with the patient/family. As documentation is a part of a nurse's practice it is expected that if an event were not documented it did not occur. Templeton points out that "it is important to understand that poor documentation in Nurses' Notes has been associated with nursing negligence in Canada. The courts maintain (with few exceptions) that if it isn't in the notes then it didn't happen" (p. 11).

It is also important for nurses as professionals to focus not only on the mechanics of charting but on the content that reflects problem-based practice

(Templeton, 1987). The clear documentation of plans and actions may indeed even keep the nurse from having to be involved in a court case. The researcher was personally involved in a coroner's case where the nursing staff did not have to testify because their notes were submitted as evidence and the judge commented on how clearly he understood the events that transpired based on the notes. The nurses did not need to testify because there were no other questions that needed to be asked.

There is probably no single action that the nurse performs that is as critical to her/his professional accountability as that of documentation. It is difficult to understand at times why the resistance to documentation continues when it is so important to his/her practice. This is why it is critical to review and evaluate our current documentation practices and develop mechanisms to facilitate nurses' expression of the care they give. Fischbach (1991) states that:

> Nursing practice now includes greater independent as well and interdependent nursing activities than ever before. Consequently, the need for more detailed entries becomes evident in light of these

broader multidimensional areas of nursing responsibility and accountability. The nurse's level of competence is often judged on the basis of documented evidence related to nursing judgments and nursing activities. The more responsibility the nurse assumes, the greater will be the accountability for those activities necessary to meet that responsibility. *Responsibility* refers to what should be done, that is, the expected or necessary action. The notion of accountability is implied. *Accountability* is concerned with what is actually done, and implies liability for one's action.

The changes in scope of practice and the acceptance of responsibility for expanded scope of practice require recorded evidence of a presumptive fundamental knowledge base, and of actions based upon that knowledge. Inherent in the acceptance of this obligation is the accountability for inaction as well as action. Equally important is recognition of the consequences of failure to document (inaction). A failure (inaction) to document

> adequately might result in misinformation (lack of information) that might result in compromised patient care and erroneous conclusions, actions, or interpretations by others. (p. 17)

From a review of the literature on conceptual frameworks it can be concluded that there are no concrete tools provided that would examine the use of a framework in a clinical setting. Laschinger (1990) stated that "part of the difficulty in applying a new and relatively abstract approach to practice is the lack of a structuring mechanism to facilitate the process" (p. 20).

The researcher developed S.O.G.I.E. problem-oriented charting (Vaillancourt, 1990) to integrate the nursing process with King's Conceptual Framework and Theory of Goal Attainment (1981).

Overview of the Nursing Process

Atkinson and Murray (1986) defined the nursing process as

> a problem-solving framework for planning and delivering nursing care to patients and their

families. The nursing process is:

- a way of thinking as a nurse
- a framework of interrelated activities resulting in competent nursing care
- dynamic and cyclical in nature, requiring repeated review
- a scientific, problem-oriented approach to patient care
- an organized approach to diagnose patients' problematic responses to illness or decreased health and provide treatment. (p. 2)

Fischbach (1991) identifies that with the nursing process "five steps are generally recognized: assessment, diagnosis, planning, implementation, and evaluation" (p. 112). Fischbach defines "nursing assessment as the deliberate collection of data for the purpose of formulating a nursing diagnosis and for developing a care plan designed to meet the needs and the life-style of the patient" (p. 116). Fischbach further defines

> nursing diagnosis as the end-product of the nursing assessment. It is made from the interpretation of available data.

> Nursing diagnosis describes the human response of the patient to changes in the bio-psychosocial, cultural, or spiritual dimensions. Nursing diagnoses communicate to nurses and to other health care providers that the focus of care is upon an individual patient. (p. 116)

According to Fischbach "the planning process includes setting goals and determining interventions. It begins with listing the patient's problems and seeking input from the patient/family about setting and meeting reasonable and attainable goals" (p. 118). The implementation stage

> of the nursing process comprises the greatest amount of nursing activity and most of the day-to-day documentation activities. Once the plan is implemented and the interventions are actually carried out and carefully documented, the nurse observes the effectiveness of the interventions, together with the patient's progress toward achieving the expected outcomes. (p. 118)

Fishbach states that:

> Evaluation requires the nurse to make a

> critical examination and to judge the patient's response to the interventions. This can occur on two levels:
>
> 1) The response (immediate) to the intervention, that is, how the patient reacted physically, emotionally, socially, and spiritually.
> 2) The response (delayed) to the goal; in other words, how movement toward the goal or expected outcome is progressing. (p. 119)

Atkinson and Murray (1986) express similar views to Fischbach regarding the nursing process. According to Atkinson and Murray (1986) assessment is comprised of data collection, data analysis and nursing diagnosis. Subjective and objective data are a part of data collection. Data analysis includes data review and data interpretation which is the means the nurse uses to "review data for organization, inconsistencies and comprehensiveness" (p. 26). The use of a well organized Nursing Assessment Form facilitates the review and interpretation of data by identifying gaps and problem areas. Atkinson and Murray (1986) identify

that nursing diagnosis is the identification of a "potential or present patient problem that requires nursing intervention in order to be resolved, or lessened, or adapted to" (p. 30).

Atkinson and Murray (1986) state that "individualized, goal-directed nursing care shall be provided through the use of the nursing process" (p. 45). Atkinson and Murray further identify that "planning involves setting priorities, establishing goals and planning nursing interventions" (p. 41).

Implementation includes validating the care plan, documenting the care plan, giving and documenting nursing care and continuing data collection (Atkinson & Murray, 1986).

Evaluation is the final step of the nursing process. Evaluation includes a review of all parts of the nursing process (Atkinson & Murray, 1986).

Components of The Documentation System Used In King Project

With the introduction of the King Project when a patient was admitted to hospital the nurse would assess the patient using a Nursing Assessment Form that was

developed based on King's Conceptual Framework (1981). The nurse would then identify the nursing diagnoses that related to the patient and write these on a Nursing Care Plan that outlined the goals for the patient as well as the specific nursing interventions that would be used to meet those goals. On a daily basis the nurse would chart on the Nurses' Notes to indicate the progress the patient was making towards meeting their goals.

The documentation on the Nurses' Notes included subjective (S) and objective (O) data which provide the nurse with a data base that could be analyzed. After analyzing the data the nurse would either select the nursing diagnosis most applicable from the care plan, or add a nursing diagnosis. The actual nursing diagnosis would be written on the Nurses' Notes to assist in locating information easily during crisis situations, quality assurance audits or research projects. Based on the individual patient's needs and desires the nurse would formulate and document the goals (G) that would identify when the nursing diagnosis was resolved. The nurse would then document the specific interventions (I) used to achieve the goals. Last but not least the nurse would evaluate (E)

the progress towards goal attainment.

S.O.G.I.E. charting was developed as a blend of Focus and Problem-Oriented Charting (Iyer & Camp, 1991) that incorporated King's Theory of Goal Attainment.

Historically, nurses at the Hamilton Civic Hospitals documented on the Nurses' Notes using a narrative format. Nurses would write down the care they had given to their patients as though they were writing a story. The nurse would write when the patient woke up, what the patient did, what the nurse did, and who visited. Pages upon pages of notes were written that contained little connection between day to day events. Reading the notes was cumbersome because one would have to read every word that was written to find the patient's problems and follow the progress of those problems. It was like trying to follow the progress of one character in a book which can be very difficult to do without reading the entire book. Unless the character's name in the book is highlighted or the character is given his/her own chapter it can be time consuming to find the information. This was exactly what happened with narrative notes and it made the evaluation of patients' problems and the nursing

care that was given a time consuming task. Storch, in a 1986 article, quotes Kim (1983) as stating "the science of nursing is in finding ways to discard trivial and frivolous acts from the ordinary repertoires of what nurses perform in `doing nursing' and to replace these acts with interventions and therapies that have a significant purpose and rationality" (p. 16). The purpose of changing the documentation system at the Hamilton Civic Hospitals was to have meaningful information documented by nurses. Once a mechanism was in place to record the information that was needed a move could be made to analyzing the content to measure patient outcomes.

Focus charting was a method of documentation where nursing diagnoses were referred to as the focus of patient care, and were written in a separate column from the nurses' notes so that the diagnoses were easier to locate. Lampe (1988) identified that "the Focus Charting System uses three columns to organize the information in the narrative section of the patient chart. (Table 1) Separating the focus statement from the body of the note eases communication and speeds data retrieval" (p. 44). King's Theory of Goal Attainment (1981) places special emphasis on the

nursing profession interacting with patients to establish mutually agreed upon goals. The essence of King's theory is that mutual goal setting will lead to goal attainment. King (1981) states that:

> In a nursing situation, one can observe reciprocally contingent interactions in which the behavior of the patient is contingent on the behavior of the nurse and vice versa. In addition, nurses and patients communicate information to each other to achieve mutual goals. (p. 152)

By having patients actively participate in the decision making about their care they are more likely to achieve their goals. King (1984) integrates her theory into practice by describing the need for a Goal Oriented Record.

King (1984) identifies the use of a Goal Oriented Nursing Record as a "modification of Weed's Problem Orientated Medical Record" (p. 14). King further states that:

> The Weed method was designed for physicians to gather data in a systematic way, to record it, to identify medical problems, make a medical diagnosis, order treatment and report

> the results of medical care. King's method was designed for nurses to gather data in a systematic way, to record data, to identify nursing problems, make a nursing diagnosis, construct a goal list, write orders for nursing care, and report the effectiveness of nursing care through goal attainment. (p. 14)

Iyer and Camp (1991) outline that Dr. Weed's Problem Orientated Method of Documentation used S.O.A.P.I.E. (S=subjective data; O=objective data; A=assessment; P=plan; I=implementation; E=evaluation) as the acronyms for charting. While S.O.A.P.I.E. charting provides clarity and organization to documentation it is linked to the medical model rather than nursing model. It does not facilitate the use of a nursing model and the nursing process.

One way to facilitate the documentation practices of nurses was to incorporate both the nursing process and nursing theory in a fashion that eliminates the need for duplicate charting. S.O.A.P.I.E. charting requires duplicate charting while S.O.G.I.E. (Vaillancourt, 1990; Fawcett, Vaillancourt & Watson, 1993) charting requires minimal duplication.

Table 1

Focus Charting

Date/Hour	Focus	Patient Care Notes

(Lampe, 1988, p. 45)

In comparing S.O.A.P.I.E. (Iyer & Camp, 1991) and S.O.G.I.E. (Vaillancourt, 1990) Subjective and Objective data are the information used to assess patients and formulate diagnoses. Subjective data are "what the patient tells you" and Objective data are "what you observe and inspect" (Iyer & Camp 1991, p. 112).

The assessment component of S.O.A.P.I.E. is "what you think is going on based on the data" (Iyer & Camp 1991, p. 112) and is the information used to develop a diagnosis. When S.O.G.I.E. charting is combined with a Focus format the nursing diagnoses are written in a separate column which facilitates the retrieval of information (Table 2). Incorporating the diagnoses into the notes would make retrieval of the information difficult as it is not as visible.

Iyer and Camp (1991) identify that the planning component of S.O.A.P.I.E. charting identifies "what you are going to do" (p. 112) and would require that the nurse document the plan of care every time he/she documents on the Nurses' Notes. This is redundant information as the plan of care is written on a Nursing Care Plan. It is the purpose of the Nursing Care Plan

to reflect the current and ongoing plan of care for the patient. Incorporating the plan of care into the notes instead of on a separate form would mean that every time one wanted to determine what the plan was, one would have to go through all of the Nurses' Notes. The purpose of the Nurses' Notes should be to reflect the progress being made towards resolving the issues on the nursing care plan. Therefore, the Nurses' Notes need to reflect the implementation of nursing interventions that are being used to achieve the goals identified on the Nursing Care Plan. Nurses can also document observations and interventions on flowsheets but observations requiring lengthy descriptions would be documented on the Nurses' Notes.

S.O.G.I.E. (Vaillancourt, 1990) charting facilitates the documentation of goals and interventions. A Nursing Care Plan may contain several goals under one nursing diagnosis. There may be long- and short-term goals identified for one nursing diagnosis. For example, with the nursing diagnosis of Impaired Mobility there may be a long-term goal that the patient is able to walk one mile without assistance; a short-term goal might be that the patient is able to walk with a walker 10 feet down the hall;

Table 2

Example of Form for Nurses' Notes Used In King Project

Date/Time	Nursing Diagnosis	Progress Towards Goals

and another goal that the patient is able to walk 20 feet down the hall with his/her walker. Goals build on one another until the long-term goal is achieved. This would make it necessary to document specific goals and actual nursing interventions on a daily basis.

S.O.G.I.E. (Vaillancourt, 1990) includes an evaluation component so that the nurse is required to assess the effectiveness of the interventions and identify when the goal has been achieved.

S.O.G.I.E. (Vaillancourt, 1990) charting combines problem-oriented and focus charting in a manner that facilitates the documentation of the goal-oriented approach that is central to King's Theory of Goal Attainment (1981).

In King's (1984) Goal Oriented Nursing Record a data base is included which is a nursing history that incorporates the concepts from her Conceptual Framework, a problem list which includes "nursing diagnoses stated as problems," nursing orders which "outline the major activities of nurses to implement care to help patients achieve the goal listed," flow sheets which "provide an efficient way of recording essential information at planned intervals," progress notes which identify the "process used by professional

nurses to help patients move toward goal attainment," and a discharge summary which identifies "when the major problems...have been partially or completely resolved" (p. 15-17).

The nursing documentation forms developed as a result of the King Project are a Nursing Assessment Form; Nursing Care Plan which includes columns for nursing diagnosis, identification of patient goals, nursing actions, and an evaluation of when goals are attained; a Personal System Flowsheet where nurses can check off the basic care given to a patient; and Nurses' Notes which use a S.O.G.I.E. (Vaillancourt, 1990) format. All of these forms include the concepts from King's Conceptual Framework (1981) in a manner which facilitates the retrieval of information and decreases repetitive charting.

CHAPTER THREE: METHODOLOGY

Research Design

A pretest, posttest, two-group research design was used for the study (Tables 3 and 4). A total of 151 patient records before and after the change in the documentation system were reviewed. The patient records for the pretest group were different from the patient records used for the posttest group. The nurses who were documenting on the patient records were not consistent either within or between the pretest and posttest groups.

Post Nursing Diagnoses Audit/ Pre King Project Audit

The use of the nursing process, specifically nursing diagnosis development, was introduced to the staff nurses prior to the King Project. All nursing staff were given a self-directed workbook and attended a two-hour educational session on developing nursing diagnosis. The audit outlined in Table 5 was developed by the Coordinating Committee of the King Project to determine the effectiveness of the Nursing Diagnosis

Table 3

Research Design

Nurses' Documentation

\|/

Nursing Assessment Form,

Nursing Care Plan and Nurses' Notes

before King documentation system

May 1991

to

October 1991 -> Review Charts

\|/

Introduction of King's Documentation System

December 1991

to

November 1992

\|/

Nursing Assessment Form,

Nursing Care Plan and Nurses' Notes

after the introduction of

King's Documentation System

\|/

January 1993

to

June 1993 -> Review Charts

Table 4

Sample of Tool Used To Determine The Effects Of Changing The Nursing Documentation System On The Nursing Process

	Before Change	After Change
1. Is there a Nursing Assessment Form completed on the patient?		
2. Does the Nursing Assessment Form include a functional assessment related to the patient's complaint?		

Educational Sessions (see Appendix A for the Committee Structure of the King Project). These audits were not pretested nor tested for reliability and validity. The audits were conducted during April and May of 1991 and were conducted by nursing staff involved in the implementation of nursing diagnosis. The auditors reviewed a total of 900 Nursing Care Plans of patients who were admitted to hospital. The data from these audits were looked at in relation to this study. The audit included the criteria outlined in Table 5.

The results of the audit indicated that nursing staff were developing nursing diagnoses on their care plans but that the diagnoses were incomplete. This audit did not look at whether the information from the Nursing Care Plan was being transferred to the Nurses' Notes. Nor did it look at whether or not the nursing process was incorporated into the Nursing Care Plan or Nurses' Notes.

In September of 1990 the Coordinating Committee developed a Nursing Process Audit for the Preimplementation of the King Project. This audit used the criteria outlined in Table 6 to gather baseline data on nurses' use of the nursing process and their nursing documentation practices.

Table 5

Post Nursing Diagnosis Audit

1) Is there a problem identified on the Nursing Care Plan?
2) Are actual problems stated in the Nursing Diagnosis format to include:
   a. statement of patient problem (P)
   b. etiology (E)
   c. signs and symptoms (S)
3) Are potential problems stated in the Nursing Diagnosis format to include:
   a. statement of patient problem (P)
   b. etiology (E)
4) Is there only one patient problem per statement?

Table 6

Pre King Project Audit

Nursing Assessment

1) Is the Nursing Assessment form complete?
2) Are there data on the Nursing Assessment form that indicate a problem which requires nursing interventions?
3) Is the problem list complete according to the data on the Nursing Assessment form?
4) If problems are identified are they phrased in a manner that indicates nursing intervention is required to resolve the problem? (nursing vs medical)
5) If there is a problem identified on the Nursing Assessment form has it been transferred to the Nursing Care Plan?

Nursing Care Plan

1) Is there a Nursing Care Plan that lists individual patient problems?
2) Are the problems listed on the Nursing Care Plan current? (Do the Nurses' Notes over the past 48 hours reflect that the problems on the care plan are being addressed?)

(table continues)

Table 6 (con't)

3) Are expected outcomes written on the Nursing Care Plan?
4) Are the expected outcomes stated in behavioral terms?
5) Do nursing interventions specify times and methods for carrying out nursing therapeutic measures?
6) Does the Nursing Care Plan indicate consideration has been given to discharge planning?
7) Does the Nursing Care Plan indicate consideration has been given to patient teaching?
8) Does the Nursing Care Plan indicate consideration has been given to the psychosocial aspects of the individual?
9) Does the Nursing Care Plan indicate that evaluation/reassessment has occurred?

Nurses' Notes

1) Does each entry have a date and time?
2) Are the Nursing Notes legible?

(table continues)

Table 6 (con't)

3) Does the nurse's designation accompany all signatures?

4) Do the data included in the Nursing Notes include subjective and objective data from the patient?

5) In the Nurses' Notes is there a description of the patient/family interaction when the family visits the unit?

6) Are problems on the Nursing Care Plan documented on the Nurses' Notes?

7) Are nursing interventions on the Nursing Care Plan documented on the Nurses' Notes?

8) In the Nurses' Notes is there any evidence of the goal (expected outcome) for the patient?

9) In the Nursing Notes is there documentation of the patient's physiological response to interventions?

10) In the Nursing Notes is there documentation of the patient's psychological response to interventions?

(table continues)

Table 6 (con't)

Patient Interview

1) Has the Nurse been available to you or sought you out at least once a day to talk about matters that concern you?
2) Has a Nurse spent time or been available to your family to discuss concerns they may have?
3) Has a nurse discussed with you plans for discharge?
4) Has a nurse discussed with you the plans for your nursing care while in hospital?
5) Has a Nurse involved you in the planning of your nursing care while you are in hospital?

A total of 90 audits were completed in 1990 by nursing staff working on the King Project.

A similar audit was completed in February 1992 on the first four units that piloted the introduction of King's Conceptual Framework. This audit, outlined in Table 7, included some additional criteria specific to S.O.G.I.E. charting and documentation guidelines introduced at the time. The additional criteria are outlined in Table 7. Also included were questions on a Personal Systems Flowsheet that was developed to facilitate the introduction of S.O.G.I.E. charting by providing nursing staff with a checklist type of form to use to indicate the basic routine care they had given. The Personal Systems Flowsheet was designed so that only Nursing Diagnosis and Notations or late entries would be recorded on the Nurses' Notes. Notations were designed to give the nurse an avenue to document care issues that did not fall under a Nursing Diagnosis. Issues like transferring patients to x-ray or if the patient fell out of bed would be included under notations. However, the expectation was that a similar notation would not occur day after day without being reviewed as to whether or not it should be a nursing diagnosis.

Table 7

Additional Information - Post Audit

Under Nursing Care Plan

- Do the goals contain timeframes or deadlines?

Under Nurses' Notes

- Does the nurse's signature accompany each entry?
- Are Nurses' Notes written in chronological order?
  If no, are the words "Late Entry" used in the Nursing Diagnosis/Notation Column to indicate out of sequence charting related to patient transfer, discharge, or shift change?
- Is the word "Notation" used when not documenting towards a Nursing Diagnosis or late entry?
  When "Notation" is written in the Nursing Diagnosis/Notation Column has a clarifying remark been included? If a "Notation" is repeatedly identified for the same problem, has a new Nursing

(table continues)

Table 7 (con't)

Diagnosis been identified on the Care Plan?

-Are empty spaces in the Progress Towards Goal Column filled in with a straight line?

-Is the documentation in the Progress Towards Goals Column a repetition of what is on the Personal Systems Flowsheet?

-Is there documentation in the Progress Towards Goals Column every shift?

-Is S.O.G.I.E. charting used in full:

-when a new Nursing Diagnosis is identified on the care plan?

-when the Nursing Diagnosis is resolved and there is goal attainment?

-Does S.O.G.I.E. charting reflect the timeliness and target dates under the Goal in the care plan?

-Is the key word for each Nursing Diagnosis S.O.G.I.E. entry written in the Nursing Diagnosis/Notation Column?

(table continues)

Table 7 (con't)

-Are subjective data indicated with an "S"?

-Are objective data indicated with an "O"?

-Are goals identified with a "G"?

The results of the pre/post implementation audits indicated that nursing staff developed a Nursing Care Plan 100% of the time compared to the 66% in the pre audit, and that the problems on the Nursing Care Plan were current 100% of the time compared to 51%. The results also indicated that problems from the Nursing Care Plan were documented on the Nurses' Notes 91% of the time compared to 56% of the time in the pre audit. Overall the audits reflected an improvement in the use of the nursing diagnosis but did not indicate whether or not there was an improvement in the use of nursing process.

It was these results that led the researcher to the belief that a more formal study was needed to validate the observations. The nursing diagnosis audits and the King audits were done independently of one another and therefore, only broad generalizations could be made from the data.

Study Subjects

Two hospitals under one administration were involved in the study. Each hospital is referred to as

a Division. The General Division has 764 Registered Nurses, two nonregistered nurses and 107 Registered Practical Nurses on staff with 360 beds. The General Division has acute medical units; surgical units (orthopedics, neurology, cardiovascular, urology, and general surgery); medical, cardiovascular and neurosurgical intensive care units; Burn Trauma Unit; Coronary Care Unit; Intermediate Cardiac Care Unit; Short Stay Unit; Ambulatory Care Clinics, and Emergency Department. The Henderson Division has 708 Registered Nurses, 10 nonregistered nurses, and 126 Registered Practical Nurses on staff with 467 beds. The Henderson Division has acute medical units; surgical units (orthopedics, gynecological and general surgery); general intensive care unit; Coronary Care Unit; Labor and Delivery; Neonatal Unit; Post Partum Unit; Long Term Care Unit; Short Stay Unit; Ambulatory Care Clinics, and Emergency Department.

During the fall of 1990 and the winter of 1991 all nursing staff at both Divisions were educated in the development of nursing diagnosis, which involved a review of the nursing process. The educational sessions were consistent in approach and were designed by a core group of nursing educators from both

Divisions. A Nursing Diagnoses Workbook (Fawcett, 1990) was developed by the core group and all nursing staff used the same workbook in their education. Nurse Clinicians received education on the use of the workbook by the core group responsible for developing the workbook. The educational sessions to the staff nurse were delivered by the Nurse Clinician responsible for a specific unit which means there may have been some differences in the actual training of the nursing staff. Some educators were responsible for more than one nursing unit. This study will not attempt to address the possible differences in the style of the educator.

S.O.G.I.E. (Vaillancourt, 1990) charting was introduced to the nursing staff when they received education on King's Conceptual Framework (King, 1981) to nursing practice. All nursing staff received education on King's Conceptual Framework (King, 1981) during the fall of 1991 and winter/spring /fall of 1992. Once again Nurse Clinicians were educated by a core group who developed the King Project. The Nurse Clinicians were asked to complete their educational sessions to their staff within two months of their own instruction. The educational tools used to introduce

King's Conceptual Framework (King, 1981) were developed by several members of the core group that developed the nursing diagnosis workbook. A King Workbook (Abel, Barnes, Fortnum, Ofosu, Reis, Tyndall, Vaillancourt & Watson, 1991) was developed by the core group and was given to all nursing staff. Unit specific educators, however, were different in some areas due to attrition. Prior to the introduction of King's Conceptual Framework (King, 1981) an audit (Table 6) was conducted across both divisions and all units to gather baseline data on documentation practices. This audit was repeated four months after the first four units were introduced to the King Project. The results have been reported earlier under the Pre and Post Audits.

Four units at one time were introduced to King's Conceptual Framework and S.O.G.I.E. charting. Both divisions have a total of 42 nursing units. A GANTT chart was developed to outline the process of implementation throughout the Divisions. Initially, two units from each Division were introduced to King's Conceptual Framework (King, 1981) and S.O.G.I.E. (Vaillancourt, 1990) charting and then four units from each Division until all units were completed.

The Nurse Clinicians, Nurse Managers and King

Preceptors of the involved units received an eight-hour workshop on King's Conceptual Framework and S.O.G.I.E. charting. The outline for the eight-hour workshop is as follows:

1) Overview of the Day
2) Welcome from Directors of Nursing
3) Role of the Nurse Manager, Nurse Clinician and King Preceptor
4) What, Who, How and Why King
5) Universal Concepts and King
6) Interpersonal Concepts and Mutual Goal Setting
7) Change (its cause, effect and treatment)
8) Application of King's Conceptual Framework and Case Studies (documentation changes)
9) Educational and People Resources available to Nurse Managers, Nurse Clinicians and King Preceptors
10) Summary/Evaluation/Implementation on Units

The Nurse Clinicians, Nurse Managers and King Preceptors returned to their units and had a month to prepare the educational sessions for their staff based

on the information and educational resources given to them during the eight-hour workshop. Seven days prior to the beginning of the educational sessions a Countdown Calendar was posted on the affected units. The calendars contained cartoon-like characters indicating how many days were left before King would be introduced. At the same time as the educational sessions, the Concept of the Month was introduced. Bryne and Schreiber (1989) developed Concept of the Month at Sunnybrook Hospital in Toronto when they were introducing King's Conceptual Framework (1981). The idea was to write one of King's concepts on a piece of bristol board each month and provide space for staff to write experiences they have had with patients regarding that particular concept. Each staff nurse received four hours of education about King's Conceptual Framework (1981), the use of a Nursing Assessment Form that was revised to include organization of the data under King's concepts, and S.O.G.I.E charting. At least one Clinician from each Division overlapped the introduction to subsequent units. This provided consistency in approach to the implementation phase. After all nursing staff had received a four-hour educational session, the use of the Nursing Assessment

Form and S.O.G.I.E. (Vaillancourt 1990) charting were implemented.

Data Collection

From May 01, 1991 to October 31, 1991 there were 8,174 admitted patients to the Henderson Division and 5,826 admissions to the General Division. From January 01, 1993 to June 30, 1993 there were 7,695 admissions to the Henderson Division and 6,109 admissions to the General Division.

Four tables were developed with 1 to 8,174; 1 to 5,826; 1 to 7,695 and 1 to 6,109. From each table 40 random charts were selected from those patients who had an admission length five days or longer. The guidelines for use of the Nursing Assessment Form indicated nurses had 48 hours to complete the assessment and nursing care plan. The researcher selected five days to review as the nurses would have had these forms completed and would have also had an opportunity to document about the diagnoses from the care plan on the Nurses' Notes. This resulted in most of the babies and maternity patients being excluded from the study because their length of stay was less

than five days.

All records were reviewed, which took anywhere from 30 minutes to an hour and a half. The length of time it took to review the records was dependent on the number of nursing diagnoses identified for each patient as well as the patient's medical condition and/or the accessibility of the chart. Some patients did not have any diagnosis identified while others had 14 diagnoses. All the records from the Henderson Division between May 01, 1991 and October 31, 1991 were on microfiche, for storage purposes, which increased the length of time it took to review the chart.

Accessibility

All patient records are kept in the Health Records departments of both Divisions for a period of 20 years following a patient's discharge or five years following the patient's death (Philpott, 1985). Therefore, patient records were available for the periods of time both prior to and after the change in the documentation system.

Prior to the educational sessions on nursing diagnosis (during the fall of 1990 and winter of 1991)

the Nursing Care Plans were not a permanent part of the patient's record. When nursing diagnosis was introduced the Nursing Care Plan became a permanent part of the patient's record and were therefore in both the pre and post audits of this research.

As all patient records are confidential, it was necessary to ensure that data collection tools did not involve patient information such as name, age or address.

It is hospital policy that all nursing research activities must be approved by the Divisions' Nursing Research Committees. A copy of the proposed research was submitted to the Nursing Research Committees at both Divisions and was subsequently sent to the Hamilton Civic Hospitals Institutional Review Board to inform them of the research. As a result of this process each Director of Health Records received a letter from the Vice President of Medical Affairs making them aware that the researcher could have access to patient records. At no time were patients' names, ages or addresses included in the data collection.

Plan Used For Collecting Data

During the six-month period from May 1991 to October 1991 and January 1993 to June 1993 there were approximately 28,000 admissions to both divisions with 2,000 of those records being babies born at the Henderson Division.

One hundred fifty-one charts were reviewed for their Nursing Assessment Form, Nurses' Notes and Nursing Care Plans. "Statistical analysis on samples of less than ten is not recommended and samples of thirty or more are more likely to accurately reflect a population" (Dempsey & Dempsey, 1986, p. 70; Nieswiadomy, 1993, p. 183). "It is often stated that samples of 30 or more are to be considered large samples and those with fewer than 30, small samples" (Best & Kahn, 1989, p. 16). As the researcher was the only person reviewing the patients' records, and as she estimated each review to take approximately one hour, a sample size of 150 was manageable. To minimize the effect of a Type 1 error a level of significance at the .01 level was used to reject the null hypothesis (Portney & Watkins, 1993, p. 349).

The same data collection tool outlined in Table 8

was used between May 1991 and October 1991 and then again between January 1993 and June 1993.

Instrumentation Development

As indicated in Chapter Two, a review of the literature indicated that there were no instruments developed that had measured the reflection of the nursing process in the patient's health record, after a change in a documentation system. There are data collection tools that have measured components of the nursing process in relation to student performance, and nursing diagnoses developed by nursing staff; however, no tools were found that had been specifically developed to look at the reflection of the nursing process in the patient's record after a change in the documentation system.

Therefore, for the purpose of this study a questionnaire was developed to include the steps of the nursing process which had been taught at the Hamilton Civic Hospitals. The questionnaire was divided into three sections--assessment, planning and evaluation.

The first section contained questions related to

the assessment component of the nursing process. This information could be found on the Nursing Assessment form. The questions in this section included the collection of data regarding specific information about the patients' physiological and psychological status, and the identification of nursing diagnoses based on the data collected.

The second section contained questions related to the planning and identification of nursing actions that could be found on the Nursing Care Plan. This section included specific questions around nursing diagnoses, goals, and nursing interventions. Questions on planning were related to the development of a Nursing Care Plan, and evidence of specific behavioral goals used to determine if nursing actions were effective. Planning questions also included collecting information about the specifics of nursing actions. Implementing questions included whether or not nursing actions included their method of delivery and timelines.

The third section contained questions related to the evidence of evaluation of interventions, and goals attainment in the Nurses' Notes. Evaluating questions reviewed whether or not the patient was involved in the planning of his/her care and whether or not nursing

actions and goals were evaluated. Kostopoulos (1988) identifies the importance of using clearly defined criteria to increase the degree of objectivity when measuring performance.

Kostopoulos (1988) reports that "Del Bueno in 1977 advocates a yes/no rating scale to increase reliability" which would decrease the subjectivity in measuring the criteria (p. 79). For this study Likert-type categories of "yes" (all the time); "some" (some of the time); and "no" (none of the time) were used for the rating scale.

As the questionnaire was developed based on the accepted components of the nursing process it contained face validity. The questionnaire was distributed to five nurses who were Masters prepared and one Nurse Educator/Researcher who had a PhD. Four of these nurses had not participated in the King Project. All six agreed that there was content validity.

Rationale For Specific Questions and Scoring

The development of the questionnaire was based on determining how complete the patient's record was with regard to reflecting parts of the nursing process. I

was also interested in determining how completely each part of the nursing process was reflected.

Questions 1 through 9 relate to the initiation and completion of a Nursing Assessment form which is the assessment phase of the nursing process. The initial phase of the nursing process is the collection of data. It is standard nursing practice that a nursing assessment is completed on all patients when they are hospitalized. Question 1 relates to whether or not a nursing assessment form was initiated on a patient. Question 7 relates to whether or not a problem list was initiated based on the information from the Nursing Assessment Form. Questions 2, 3, 4, 5 and 6 relate to how thorough the Nursing Assessment Form was completed. Questions 8 and 9 relate to how complete the problem list was based on the information from the Nursing Assessment Form. Questions 2, 3, 4, 5, and 6 could only be scored if Question 1 had an "all" or "some" response. Questions 8 and 9 could only be scored if there was an "all" or "some" response to Question 7.

Questions 10 through 29 relate to the development of a Nursing Care Plan which is the planning phase of

Table 8

QUESTIONNAIRE: To Evaluate A Nursing Documentation System

(REVIEW FIRST 5 DAYS OF PATIENT'S ADMISSION)

CHART NUMBER:_____

UNIT: _____ PT. SEX: _____ AGE: _____

PART 1: ASSESSMENT - NURSING ASSESSMENT FORM

1. Is there a Nursing Assessment form completed on the patient?

_____ All (Yes) _____ Some (Part)

_____ None (No)

2. Does the Nursing Assessment form include a functional assessment related to the patient's complaint? (includes how long, limiting effects of c/o, relieving factors, aggravating factors)

_____ All (Yes) _____ Some (Part)

_____ None (No)

3. Does the Nursing Assessment form include a physical assessment related to the patient's c/o? (includes inspection, palpation, auscultation)

_____ All (Yes) _____ Some (Part)

_____ None (No)

(table continues)

Table 8 (con't)

4. Does the Nursing Assessment form include a functional inquiry that reviews all physiological systems?

_____ All (Yes) _____ Some (Part)

_____ None (No)

5. Does the Nursing Assessment form include a physical assessment of areas where the patient indicated there was a problem?

_____ All (Yes) _____ Some (Part)

_____ None (No) _____ N/A

6. Does the Nursing Assessment form include information about the patient's psychosocial self? (Include any of: perception, self, body image, space, time, growth and development, role, stress, interaction, transaction, power, authority, status, decision making)

_____ All (Yes) _____ Some (Part)

_____ None (No)

Comments:

(table continues)

Table 8 (con't)

7. Are there patient problems listed on the Nursing Assessment form?

_____ All (Yes) _____ Some (Part)

_____ None (No)

8. Is the list of problems listed on the Nursing Assessment form complete?

_____ All (Yes) _____ Some (Part)

_____ None (No)

Comments:

9. Are the problems that are listed on the Nursing Assessment form phrased in a manner that indicates nursing actions/activities are required to resolve the problem?

_____ All (Yes) _____ Some (Part)

_____ None (No)

PART II - PLANNING - NURSING CARE PLAN

10. Is there a Nursing Care Plan developed on the patient?

_____ All (Yes) _____ Some (Part)

_____ None (No)

(table continues)

Table 8 (con't)

11. Are the problems listed on the Nursing Assessment form transferred to the Nursing Care Plan?

_____ All (Yes) _____ Some (Part)

_____ None (No)

Do the problems listed on the care plan include they are:

12. actual problems

_____ All (Yes) _____ Some (Part)

_____ None (No)

13. potential problems

_____ All (Yes) _____ Some (Part)

_____ None (No)

Do the listed problems on the Nursing Care Plan stated in the nursing diagnosis format include:

14. a) statement of the problem

_____ All (Yes) _____ Some (Part)

_____ None (No)

15. b) etiology (related to)

_____ All (Yes) _____ Some (Part)

_____ None (No)

(table continues)

Table 8 (con't)

16. c) signs and symptoms (as evidenced by)

_____ All (Yes) _____ Some (Part)

_____ None (No)

17. Do actual problems listed include all aspects of a nursing diagnosis statement? (problem, etiology, S/S)

_____ All (Yes) _____ Some (Part)

_____ None (No)

18. Do potential problems listed include all aspects of a nursing diagnosis statement? (problem, etiology)

_____ All (Yes) _____ Some (Part)

_____ None (No)

19. Are goals written for each nursing diagnosis?

_____ All (Yes) _____ Some (Part)

_____ None (No)

20. Are goals written as expected behavioral outcomes as a result of nursing actions?

_____ All (Yes) _____ Some (Part)

_____ None (No)

21. Are goals identified as either short or long term? (long term = behavior expected at time of discharge; short term = incremental behaviors leading to eventual

(table continues)

Table 8 (con't)

discharge)

_____ All (Yes) _____ Some (Part)

_____ None (No)

22. Are nursing actions/activities identified for each nursing diagnosis?

_____ All (Yes) _____ Some (Part)

_____ None (No)

23. Are all possible nursing activities/actions included?

_____ All (Yes) _____ Some (Part)

_____ None (No)

24. Do nursing actions/activities identify the times for carrying out the nursing measures?

_____ All (Yes) _____ Some (Part)

_____ None (No)

25. Do nursing actions/activities identify the method(s) for carrying out nursing measures?

_____ All (Yes) _____ Some (Part)

_____ None (No)

26. Does the Nursing Care Plan/personal systems flowsheet indicate that the nursing diagnosis have been

(table continues)

Table 8 (con't)

reviewed on a regular basis?

_____ All (Yes) _____ Some (Part)

_____ None (No)

27. Does the Nursing Care Plan indicate that nursing diagnosis have been resolved?

_____ All (Yes) _____ Some (Part)

_____ None (No)

28. Is there evidence on the Nursing Care Plan to indicate that the patient participated in the development of the care plan? (by identification of mutual goal)

_____ All (Yes) _____ Some (Part)

_____ None (No)

29. Is there evidence on the Nursing Care Plan that new nursing diagnoses have been developed? (based on an issue being documented in the nurses notes three times)

_____ All (Yes) _____ Some (Part)

_____ None (No)

Comments:

PART III - IMPLEMENTATION AND EVALUATION - NURSES' NOTES

30. Are problems from the Nursing Care Plan reflected

(table continues)

Table 8 (con't)

in the Nurses' Notes?

_____ All (Yes) _____ Some (Part)

_____ None (No)

31. Are the problems from the Nursing Care Plan reflected in the Nurses' Notes as nursing diagnoses?

_____ All (Yes) _____ Some (Part)

_____ None (No)

32. Are nursing diagnoses referred to in the Nurses' Notes so that the problem is identifiable? (may use a key word from the diagnosis)

_____ All (Yes) _____ Some (Part)

_____ None (No)

33. Are behavioral goals from the Nursing Care Plan referred to in the Nurses' Notes?

_____ All (Yes) _____ Some (Part)

_____ None (No)

34. Are actions/activities from the Nursing Care Plan referred to in the Nurses' Notes?

_____ All (Yes) _____ Some (Part)

_____ None (No)

35. Is there evidence in the Nurses' Notes that indicates there is movement towards goal attainment as

(table continues)

Table 8 (con't)

identified on the Nursing Care Plan?

_____ All (Yes) _____ Some (Part)

_____ None (No)

36. Is there evidence in the Nurses' Notes that indicates that the effectiveness of nursing actions/activities identified on the Nursing Care Plan have been evaluated? (this would be reflected in documentation of the patient's response both physiologically and psychologically to the activity)

_____ All (Yes) _____ Some (Part)

_____ None (No)

37. Is there evidence in the Nurses' Notes that indicates patient problems have been identified but not transferred to the Nursing Care Plan?

_____ All (Yes) _____ Some (Part)

_____ None (No) _____ N/A

38. Is there evidence in the Nurses' Notes that indicates the patient has been involved in identifying actual/potential nursing diagnosis?

_____ All (Yes) _____ Some (Part)

_____ None (No)

_____ patient unable to participate

(table continues)

Table 8 (con't)

39. Is there evidence in the Nurses' Notes that indicates the patient/family have been asked to evaluate the effectiveness of his/her nursing care?

_____ All (Yes) _____ Some (Part)

_____ None (No)

_____ patient unable to participate

40. Is there evidence in the Nurses' Notes to indicate nursing actions that deal with the patient's psychosocial self?

_____ All (Yes) _____ Some (Part)

_____ None (No) _____ N/A

the nursing process. Question 10 indicates whether or not a Nursing Care Plan was initiated on the patient. Questions 11 to 29 relate to how well the plan of care was developed in terms of whether or not it included nursing diagnoses statements, goals, and nursing actions. Questions 11 through 29 indicated whether or not the patient participated in his/her plan of care. Questions 11 through 29 could only be scored if there was a "some" or "all" response to Question 10. Question 11 could only be further assessed if Question 7 was scored either "all" or "some" as this involved transfer of the problems from the Nursing Assessment Form to the Nursing Care Plan. Questions 12, 14, 15, 16, and 17 could only be scored if the patient had actual problems identified on the Nursing Care Plan. Questions 13, 14, 15, and 18 could only be scored if the patient had potential problems identified on the Nursing Care Plan. Question 20 and 21 could only be scored if the patient had an "all" or "some" response to Question 19 which indicated goals had been identified on their Nursing Care Plan. Questions 23, 24, and 25 could only be scored if the patient had an "all" or "some" response to Question 22 which indicated that there were nursing actions identified on the

Nursing Care Plan.

Question 30 relates to the transfer of information from the Nursing Assessment Form and Nursing Care Plan to the Nurses' Notes. Questions 31 through 37 indicated whether there was planning, implementation and evaluation reflected in the Nurses' Notes and were scored regardless of whether there was a Nursing Care Plan. Questions 38 through 40 indicated whether or not there was involvement of the patient in his/her care.

Data Collection and Recording

Questions were scored based on an Likert-type scale which included the categories of "all," "some" or "none." The questions were closed ended and designed so that the "all" responses indicated that a particular component of the nursing process was used. All of the "none" responses indicated that the nursing process was not being used. "All" was defined as indicating 70% or more of the information was included. "Some" indicated that 35% to 69% of the information was included. "None" indicated that less that 34% of the information was present. As there was only one rater of the questionnaires this scoring technique was consistent

throughout. For the purposes of this study the distance between categories was presumed to be equal. There was no interrater observer testing completed on this questionnaire.

The Nursing Assessment Form, Nursing Care Plan and Nurses' Notes for a five-day period were reviewed on each chart using the Questionnaire: To Evaluate A Nursing Documentation System (Table 8).

Limitations of the Design

The questionnaire was a limitation in that it had not been used in other research.

Other educational sessions within the organization on a variety of topics were available to the staff between the pretest and the posttest but none of them would have dealt directly with documentation.

Individual staff members may have attended outside educational sessions on nursing diagnosis, or the significance of documentation to nursing practice but if this occurred it would have involved only a small number of people.

Maturation would also have to be considered as a variable that may effect results (Cook & Campbell,

1979). There was no doubt that nurses would have been exposed to literature from the College of Nurses regarding nursing diagnosis and their professional accountability associated with documentation. The College of Nurses sends all registrants a newsletter every month. The newsletter includes letters on legal issues and the standards of practice. There would be no way of controlling the influence this literature may have had on attitudes regarding the valuing of documenting the nursing process.

The pretesting of individuals was another variable which may have affected results (Cook & Campbell, 1979). Subjects exposed to outcome measures may gain knowledge of expected results and then learn the correct answers for the posttest. As patient records were used the individual staff involved were unaware that the research was being conducted. However, there may have been some bias as the researcher, as the auditor, was aware of the pre and post test results.

If the instrumentation were changed between the pre and posttest this may have influenced the results (Cook & Campbell, 1979). This was not an issue with this research as the instrumentation tool was not changed between the pre and posttest.

Dependent and Independent Variable

The dependent variable or outcome was the reflection of the nursing process on the patient's health record.

The treatment or independent variable was the education of nursing staff about King's Conceptual Framework, and S.O.G.I.E. charting on the Nurses' Notes.

Null Hypothesis

There will be no significant increase in the use of the nursing process on the Nursing Care Plan or Nurses' Notes as a result of using a nursing documentation system developed using King's Conceptual Framework (1981).

Summary

The specific details about pre and post audits, the subjects and their preparation, data collection methods, instrument development and scoring have been

presented in this Chapter. Once the data were collected they were entered and analyzed using the computer program SYSTAT. The following questions emerged in Chapter One:

1) Is there an interrelationship between documentation on the Nursing Assessment Form, Nursing Care Plan and the Nurses' Notes?
2) Does this interrelationship change with the introduction of a documentation system developed using concepts from King's Conceptual Framework?
3) Is the interrelationship between the Nursing Assessment Form, Nursing Care Plan and Nurses' Notes more congruent with the introduction of a documentation system developed using concepts from King's Conceptual Framework?

As this was an experiment involving one independent variable (change in the documentation system) and one repeated factor (General Division vs. Henderson Division) a mixed analysis of variance (ANOVA) was used to analyze the data (Portney & Watkins, 1993). The independent factor or between-

subjects was analyzed as it would be in a one-way analysis of variance and the within-subjects or repeated factors were analyzed using techniques for a repeated measures analysis (Portney & Watkins, 1993).

CHAPTER FOUR: FINDINGS

Results

The **Nursing Documentation System Questionnaire** contained two types of items, items applicable to all charts and items not applicable to all charts. Twelve of the items (1, 7, 10, 31-36, 38, 39 and 40) applied to all charts. The remaining items (2-6, 8, 9, 11-30, and 37) applied to only some of the records for various reasons or specifically applied to the quality of documentation regarding components of the nursing process. For example, some questions were dependent on others being answered; some questions did not apply to the patient; the patient/family were unable to indicate their needs; or the question related to how detailed the documentation was completed related to assessing, planning, implementing and evaluating. These two types of items will be addressed in turn.

Items Applicable to All Charts

Of the twelve items that applied to all charts,

item 38 was recorded as zero for all records and was excluded from further consideration. The remaining eleven items were assessed for internal consistency, using 150 records for the analysis. Cronbach's coefficient alpha for these items was found to be .63, lower than the usually accepted standard of at least .70 (Nunnally, 1978). Examination of the computer output indicated that item 7 was the primary source of this inadequate reliability. Excluding this item improved reliability into an adequate range. Items 1, 10, 31, 32, 33, 34, 35, 36, 39 and 40 were found to have a Cronbach's alpha value of .76. These items were totaled to form a **Record Completeness Score.** The Cronbach's alpha is a "reliability index used for estimating internal consistency in instruments composed of several items or questions" (Portney & Watkins, 1993, p. 680). Cronbach's alpha "reflects both degree of correspondence and agreement among ratings" (Portney & Watkins, 1993, p. 509).

Question 38 (Is there evidence in the Nurses' Notes that indicates the patient has been involved in identifying actual/potential nursing diagnosis?) received a consistent "none" response on examining all charts. While this indicates no significant change

between the before and after groups this response should still be noted. The "none" response would appear to indicate that patients were never asked whether they had problems they were concerned about, or wanted assistance in resolving. Nurses may indeed have asked patients if they had any concerns they wanted addressed, but did not document this information. However, it is well documented in the legal nursing literature that information that is not documented is considered not done by the courts (Templeton, 1987). This concept is taught in schools of nursing and is reinforced by employment agencies. It was interesting to note that there was a possibility that nurses are asking patients to participate in identifying their problems but not recording this information on the patient's record. It would be interesting to return to ask the patients whose records were reviewed whether or not the nursing staff had asked them if they had problems they wanted addressed.

Question 7 (Are there patient problems listed on the Nursing Assessment Form?) indicated it was not a reliable measure in relation to Questions 1, 10, 31-36, 39 and 40. The question ranked higher before the change in documentation rather than after. The reason

this probably occurred was because the Nursing Assessment Form prior to the change in documentation included a space titled "Patient Problems Requiring Nursing Interventions." The changed Nursing Assessment Form provided a space at the end for additional information and included a separate page that listed nursing diagnoses which could be checked off by the nurse. After the introduction of the new Nursing Assessment Form units expressed concern about the length of the form, as a result nurses were told that the checksheet of nursing diagnoses could be used as a worksheet and therefore was not a permanent part of the patient's record. It would appear by the response to Question 7 that if there is not a specific space on the form to write in nursing diagnoses/problems at the time of assessment then diagnoses were not listed.

The 2x2 design had four cells (Division [General/Henderson] x Group [Before/After system implementation]). The **Record Completeness Scores** were analyzed using a mixed-model factorial Analysis of Variance (ANOVA).

For statistical analysis, Division was considered as a random factor and Group was considered as a fixed factor. As such, the appropriate error term for the

Group and the Group by Division interaction was the usual error term for fixed effects. The appropriate error term for the Division effect, however, was the Mean Square value for the Group by Division interaction (Howell, 1992).

This analysis yielded a significant main effect for Group; collapsed across Division, the After Group scored significantly higher on **record completeness** than did the Before Group ($F[1,147] = 197.28$; $p < .001$; $X = 8.73$, s.d. = 2.76; $X = 3.67$, s.d. = 1.47, respectively). No effects were found for either the Division main effect or for the Group by Division interaction ($F[1,1] = 113.15$; $p > .05$; $F[1,147] < 1$), indicating that there was no difference in the **Record Completeness score** between the two Divisions and that the Group effect was the same for both Divisions (see Table 9 and Figure 1).

Because examination of Table 9 indicated potential heterogeneity of variance among the four cells, the ANOVA results were verified using the non-parametric Mann Whitney U test to compare the two Divisions and the two Groups. These results mirrored the ANOVA results. The Before and After Groups differed significantly from each other but the Divisions did not

differ (see Table 10 or Appendix B for Mann-Whitney U results on all items).

Individual items were also assessed. Because there were significant departures from normality on the distributions of item scores (see Appendix C for the measures of kurtosis and their standardized scores), Mann-Whitney U tests were performed both between Groups collapsed across Division and for each Division separately instead of parametric independent t-tests (see Appendix D for these analyses).

Collapsed across Divisions, the Mann-Whitney tests indicated that the After Group was ranked significantly higher on items 10, 31, 32, 33, 34, 35, and 36 whereas the Before Group was ranked significantly higher on items 1 and 7 (all ps $\leq$ .01) (see Table 11).

Mann-Whitney tests with Divisions considered separately yielded similar results (see Appendix D). For the General Division, the After Group was ranked significantly higher on items 10, 31, 32, 33, 34, 35, 36, 39 and 40 whereas the Before Group was ranked significantly higher on item 7 but not on item 1 (all significant ps $\leq$ .05). For the Henderson Division, the After Group was ranked significantly higher on items 10, 31, 32, 33, 34, 35, but not on item 36, 39, or 40.

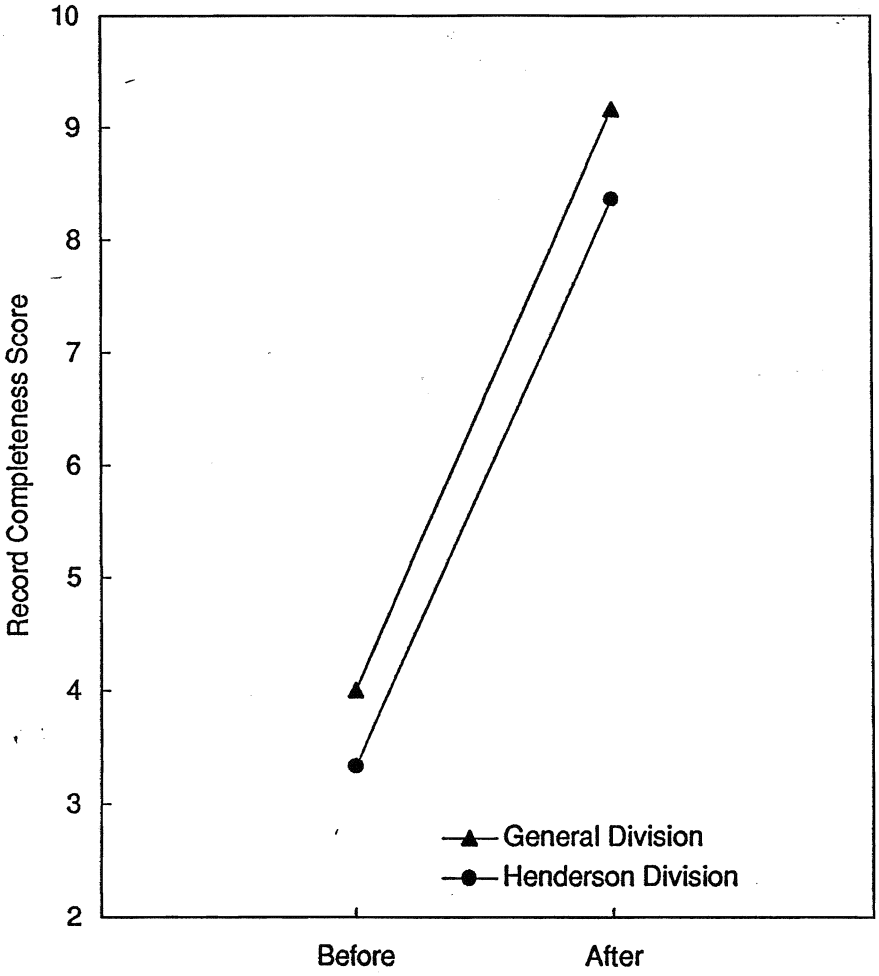

Figure 1. Mean Record Completeness Score Before And After Implementation Of The Nursing Documentation System As A Function Of Divison Sampling

Table 9

Cell Means and Standard Deviations for Record Completeness

		Scores	
		Before	After
Divisions			
General	n	36	37
	X	4.00	9.16
	s	1.01	2.56
Henderson	n	36	42
	X	3.33	8.36
	s	1.77	2.90

Table 10

Mann-Whitney U Test On Record Completion Scores

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS SCORE

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	8436.500
BEFORE	72	3039.500

MANN-WHITNEY U TEST STATISTIC = 5276.500

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS SCORE

GROUPING VARIABLE IS PLACE$

GROUP	COUNT	RANK SUM
G	73	5877.500
H	78	5598.500

MANN-WHITNEY U TEST STATISTIC = 3176.500

Table 11

Mann-Whitney U Test

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q1

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	5441.000
BEFORE	72	6035.000

MANN-WHITNEY U TEST STATISTIC = 2281.000

ONE-WAY ANALYSIS OF VARIANCE FOR 150 CASES

DEPENDENT VARIABLE IS Q7

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	5375.000
BEFORE	71	5950.000

MANN-WHITNEY U TEST STATISTIC = 2215.000

(table continues)

Table 11 (con't)

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q10

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	6852.000
BEFORE	72	4624.000

MANN-WHITNEY U TEST STATISTIC = 3692.000

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q31

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	8272.000
BEFORE	72	3204.000

MANN-WHITNEY U TEST STATISTIC = 5112.000

(table continues)

Table 11 (con't)

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q32

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	8369.500
BEFORE	72	3106.500

MANN-WHITNEY U TEST STATISTIC = 5209.500

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q33

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	7116.000
BEFORE	72	4360.000

MANN-WHITNEY U TEST STATISTIC = 3956.000

(table continues)

Table 11 (con't)

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q34

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	7052.500
BEFORE	72	4423.500

MANN-WHITNEY U TEST STATISTIC = 3892.500

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q35

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	6895.000
BEFORE	72	4581.000

MANN-WHITNEY U TEST STATISTIC = 3735.000

(table continues)

Table 11 (con't)

ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES

DEPENDENT VARIABLE IS Q36

GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	6627.500
BEFORE	72	4848.500

MANN-WHITNEY U TEST STATISTIC = 3467.500

whereas the Before Group was ranked significantly higher on item 1 but not item 7 (all significant ps $\leq .01$).

Responses to Questions 1, 10, 31-36, 39 and 40 demonstrate a significant change after the introduction of the King Project:

1. Is there a Nursing Assessment Form completed on the patient?

10. Is there a Nursing Care Plan developed on the patient?

31. Are the problems reflected in the Nurses' Notes as nursing diagnosis?

32. Are nursing diagnoses referred to in the Nurses' Notes so that the problem is identifiable?

33. Are behavioral goals referred to in the Nurses' Notes?

34. Are nursing actions/activities referred to in the Nurses' Notes?

35. Is there evidence in the Nurses' Notes that indicates there is movement towards goal attainment?

36. Is there evidence in the Nurses' Notes that indicates that the effectiveness of nursing actions/activities have been evaluated?

39. Is there evidence in the Nurses' Notes that

indicates the patient/family have been asked to evaluate the effectiveness of his/her nursing care?

40. Is there evidence in the Nurses' Notes to indicate nursing actions that deal with the patient's psychosocial self?

The ANOVA compares the variability between the groups as well as the variability within each of the groups (Nieswiadomy, 1993). The difference between the groups ($p > 0.000$, Appendix B) is significantly higher than the difference within groups ($p > 0.215$, Appendix B). As there was a significant difference between groups at a p value greater than a .001 level the null hypothesis can be rejected. This indicates that after the change in the documentation system the patients' records reflect that:

1) A Nursing Assessment Form is developed on the patient.

2) A Nursing Care Plan is developed on the patient.

3) Patient problems are reflected in the Nurses' Notes as nursing diagnoses.

4) Nursing diagnoses are referred to in the Nurses' Notes so that the problem is identifiable.

5) Behavioral goals are referred to in the Nurses' Notes.

6) Nursing actions/activities are referred to in the Nurses' Notes.

7) There is evidence in the Nurses' Notes that there has been movement towards goal attainment.

8) There is evidence in the Nurses' Notes that indicates that the effectiveness of nursing actions/activities have been evaluated.

9) There is evidence in the Nurses' Notes that indicates the patient/family have been asked to evaluate the effectiveness of nursing care.

10) There is evidence in the Nurses' Notes that indicates nursing actions which deal with the patient's psychosocial self.

A correlation analysis illustrated in Table 12 "includes a matrix of intercorrelations, which presents the correlation coefficients for all pairs of variables" (Portney & Watkins, 1993, p. 443) between the items that could be completed on all patient's records. Appendix G indicates the correlation matrix of the 40 questionnaire items. Portney and Watkins (1993) further identify that:

> Correlations ranging from 0.00 to .25 indicate little or no relationship; those from .25 to .50 suggest a fair degree of

> relationship; values of .50 to .75 are moderate to good; and values above .75 are considered good to excellent. (p. 442)

For this matrix based on 150 charts a correlation of .16 is required for a $p < .05$.

Moderate to good relationships were evident between Questions 31 and 26 (.53). This would indicate that when there was a "yes" response to "Are the problems from the Nursing Care Plan reflected in the Nurses' Notes as nursing diagnosis?" (Question 31) there was also a "yes" response to "Does the Nursing Care Plan/Personal Systems Flowsheet indicate that the nursing diagnosis have been reviewed on a regular basis?" (Question 26). This indicates that when nursing diagnoses are documented in the Nurses' Notes they are also reviewed on a regular basis.

There was also a moderate to good relationship between Question 30 (Are problems from the Nursing Care Plan reflected in the Nurses' Notes?) and 31 (Are the problems from the Nursing Care Plan reflected in the Nurses' Notes as nursing diagnosis?). This indicates that when there is a Nursing Care Plan the problems from that plan are reflected in the Nurses' Notes in a

Table 12

Pearson Correlation Matrix

	Q1	Q2	Q3	Q4	Q5
Q1	1.00				
Q7	0.101	0.178	-0.080	-0.113	-0.124
Q10	0.076	-0.074	0.017	-0.102	0.163
Q31	-0.112	-0.261	0.208	-0.033	0.267
Q32	-0.117	-0.230	0.222	-0.037	0.302
Q33	-0.019	-0.052	0.078	-0.018	0.230
Q34	-0.097	-0.028	0.282	-0.074	0.222
Q35	-0.183	-0.026	0.040	-0.051	0.108
Q36	0.126	-0.143	0.107	0.030	0.435
Q38	.	.	.	.	.
Q39	0.020	-0.175	0.081	-0.035	0.115
Q40	0.109	-0.001	-0.023	-0.195	0.127

	Q6	Q7	Q8	Q9	Q10
Q7	0.089	1.000			
Q10	0.205	0.075	0.199	-0.059	1.000
Q31	0.221	-0.196	0.225	0.071	0.346

(table continues)

Table 12 (con't)

	Q6	Q7	Q8	Q9	Q10
Q32	0.213	-0.201	0.232	0.022	0.346
Q33	0.055	-0.158	0.274	-0.183	0.233
Q34	0.112	-0.131	0.227	-0.036	0.283
Q35	0.031	-0.180	0.223	0.018	0.200
Q36	0.061	-0.154	0.141	-0.008	0.185
Q38	.	.	.	.	.
Q39	0.187	-0.034	0.099	0.125	0.143
Q40	0.051	-0.047	0.061	0.065	0.137

	Q11	Q12	Q13	Q14	Q15
Q31	-0.311	0.291	-0.148	-0.007	0.242
Q32	-0.393	0.268	-0.145	-0.094	0.176
Q33	-0.259	0.378	0.056	0.053	0.135
Q34	-0.385	0.136	-0.067	-0.114	-0.031
Q35	-0.337	0.362	-0.126	-0.147	0.183
Q36	0.089	-0.078	-0.042	0.051	0.033
Q38	.	.	.	.	.
Q39	0.140	0.037	0.064	0.032	0.093

(table continues)

Table 12 (con't)

	Q11	Q12	Q13	Q14	Q15
Q40	-0.044	0.047	0.089	0.041	0.093

	Q16	Q17	Q18	Q19	Q20
Q31	-0.166	-0.043	-0.112	0.093	-0.047
Q32	-0.214	-0.082	-0.071	0.066	-0.096
Q33	-0.038	0.078	0.140	0.033	-0.048
Q34	-0.117	-0.065	-0.046	-0.008	-0.140
Q35	0.023	0.131	0.201	0.095	-0.002
Q36	-0.052	-0.029	-0.180	-0.062	0.044
Q38	.	.	.	.	.
Q39	-0.000	0.019	-0.372	-0.035	0.084
Q40	-0.171	-0.106	-0.233	0.078	-0.048

	Q21	Q22	Q23	Q24	Q25
Q31	-0.011	0.085	-0.032	-0.150	-0.026
Q32	0.082	0.061	-0.029	-0.157	0.002
Q33	0.114	0.050	0.035	-0.092	-0.061

(table continues)

Table 12 (con't)

	Q21	Q22	Q23	Q24	Q25
Q34	0.134	0.084	0.133	-0.014	0.130
Q35	0.096	0.107	0.033	-0.087	0.038
Q36	-0.071	-0.114	-0.004	0.032	0.053
Q38	.	.	.	.	.
Q39	-0.081	-0.382	0.111	-0.055	0.003
Q40	-0.038	-0.081	0.027	0.066	-0.045

	Q26	Q27	Q28	Q29	Q30
Q31	0.530	0.247	0.241	0.100	0.575
Q32	0.566	0.222	0.222	0.091	0.524
Q33	0.218	0.063	0.119	0.077	0.248
Q34	0.239	0.260	0.161	0.160	0.426
Q35	0.245	0.150	0.173	0.018	0.324
Q36	0.169	0.150	-0.105	0.251	0.276
Q38	.	.	.	.	.
Q39	0.143	0.249	0.266	0.122	0.184
Q40	0.011	-0.027	0.077	0.013	0.132

(table continues)

Table 12 (con't)

	Q31	Q32	Q33	Q34	Q35
Q31	1.000				
Q32	0.961	1.000			
Q33	0.502	0.487	1.000		
Q34	0.472	0.466	0.266	1.000	
Q35	0.444	0.433	0.684	0.296	1.000
Q36	0.342	0.314	0.202	0.342	0.008
Q38	.	.	.	.	.
Q39	0.244	0.227	-0.043	0.126	-0.066
Q40	0.156	0.134	0.201	0.067	0.092

	Q36	Q37	Q38	Q39	Q40
Q36	1.000				
Q38	.	.	.	.	.
Q39	0.326	0.226	.	1.000	
Q40	0.231	-0.005	.	0.144	1.000

. = correlation was not computable

nursing diagnosis format. This would facilitate the retrieval of information.

Questions 26 (Does the Nursing Care Plan/Personal Systems Flowsheet indicate that the nursing diagnosis have been reviewed on a regular basis?) and 32 (Are nursing diagnoses referred to in the Nurses' Notes so that the problem is identifiable with a key word from the diagnoses?) indicate a moderate relationship. This may indicate that if nursing diagnoses are evident in the Nurses' Notes they are more likely to be evaluated.

Questions 32 and 30 show a moderate relationship. This indicates that when problems are reflected in the Nurses' Notes they are more likely to be identified by a key word which would facilitate retrieval of information from the patient's record.

Questions 33 (Are behavioral goals from the Nursing Care Plan referred to in the Nurses' Notes?) and 35 (Is there evidence in the Nurses' Notes that indicates there is movement towards goal attainment as identified on the Nursing Care Plan?) show a moderate relationship. This indicates that when behavioral goals were referred to in the Nurses' Notes there was more likely to be evidence as to whether or not there was movement towards goal attainment.

Questions 31 (Are the problems from the Nursing Care Plan reflected in the Nurses' Notes as nursing diagnosis?) and 32 (Are nursing diagnoses referred to in the Nurses' Notes so that the problem is identifiable by using a key word from the diagnosis?) show a good to excellent relationship. Therefore, as staff reflected nursing diagnosis in the Nurses' Notes they also used a key word to highlight the diagnosis. This was probably facilitated by the use of a Focus Charting format (Table 1) which provided a column in the notes which enabled this practice.

Questions 1 (Is there a Nursing Assessment Form completed on the patient?) and 10 (Is there a Nursing Care Plan developed on the patient?) indicate that there is little to no relationship between these questions. This demonstrates that just because a nursing assessment was completed on the patient does not mean that there was a Nursing Care Plan developed.

Questions 1 and 30 also show little or no relationship to one another indicating that just because a Nursing Assessment Form was completed does not mean that problems are reflected in the Nurses' Notes. This is significant because it illustrates that because a nurse completes an assessment on a patient it

does not necessarily mean that the planning component of the nursing process will be reflected in his/her documentation practices.

Questions 10 and 30 indicate a fair degree of relationship. This indicates that when there was a Nursing Care Plan developed on the patient there was more likely to be reference to the problems in the Nurses' Notes.

Items Applicable to Some Charts

These items focused on the quality of the documentation and could only be scored if there was a "yes" response to another question. For example, if there were no care plan developed on the patient then the questions related to the quality of the care plan could not be answered.

Mann-Whitney U tests were performed on items 2-6, 8, 9, 11-13, 15-30, and 37 (see Appendix E). Because not all charts could be scored on each of the items, the number of records varied across items (see Appendix E for the overall and by Division analyses). Also, of the 127 charts that could be scored on item 14, 1 was scored as "some" and 126 were scored as "all"; as a

result this item was excluded from further analysis (see Appendix F).

Overall, the Mann-Whitney tests indicated that the After Group was ranked significantly higher on items 3, 5, 6, 12, 16, 17, 26, and 30, whereas the Before Group was ranked significantly higher on item 11 only (all significant ps $\leq$ .02).

Mann-Whitney tests with Divisions, considered separately, yielded somewhat different results. For the General Division, the After Group was ranked significantly higher on items 3, 5, 26, and 30, whereas the Before Group was ranked significantly higher on items 11, 16, and 17 (all significant ps $\leq$ .05). For the Henderson Division, the After Group was ranked significantly higher on items 6, 12, 26, and 30 whereas the Before Group was ranked significantly higher on none of the items (all significant ps $\leq$ .002).

Questions 2-6 related to how well the documentation on the Nursing Assessment Form was completed. The Nursing Assessment Form was a standardized form developed by the Departments of Nursing. How well the form was completed was dependent on the individual nurse's knowledge of physical/psychosocial assessment. For example, nurses working in the cardiovascular units

of the hospital may complete a more thorough cardiovascular exam than nurses working on a surgical unit. A Registered Nursing Assistant/Registered Practical Nurse would not have the same skills as a Registered Nurse in completing a physical assessment. The Mann-Whitney tests indicated that the After Group of both Divisions scored higher on items 3, 5, and 6. Items 2 and 4 did not show a difference before and after. This may be due to the fact that both the before and after standardized Nursing Assessment Form required that nurses respond to questions 2 and 4, whereas questions 3, 5, and 6 required that the nurse make a clinical judgment as to whether or not the patient's physical/psychosocial status needed to be explored more thoroughly. Also, the after standardized Nursing Assessment Form provided space for the nurses to respond to questions 3, 5, and 6, where the before Nursing Assessment Form did not provide this space even though the collection of these data was a minimum standard of practice. This may indicate that when space was provided for assessment on the form the nurse was more likely to be cued that he/she needed to make clinical judgments or it may mean that he/she was incorporating the concepts from the nursing theory.

Questions 8, 9, and 11 could only be scored if the nurse identified the patient's problems on the Nursing Assessment Form. Questions 8 and 9 did not show any change before and after. These two questions related to how thoroughly the problems were identified on the Nursing Assessment Form. Question 11 related to the transfer of problems from the Nursing Assessment Form to the Nursing Care Plan. The before group ranked significantly higher on question 11 and that may be due to the fact that the before Nursing Assessment Form had a section that was titled "Patient Problems Requiring Nursing Interventions." This indicates that when the cue is not provided, the information is not transferred from one form to another. This is consistent with the responses to Question 7 (Are there patient problems listed on the Nursing Assessment form?) which was scored on all charts and indicated that the before group ranked higher.

Questions 13 and 15-30 could only be scored if there were a Nursing Care Plan on the patient's record. Questions 13, 14, 15, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, and 29 did not demonstrate any significant difference in the before/after groups. All of these questions related to the development of the Nursing

Care Plan. As mentioned previously all staff received education on the development of nursing diagnosis and Nursing Care Plans prior to the change in the Nursing Assessment Form, Nurses' Notes and the introduction of a conceptual framework. Therefore, it was reasonable to expect that these questions would not demonstrate a significant change. This is consistent with audit results that were completed after the educational sessions on nursing diagnosis (Table 5). The results of the audit indicated that nursing staff were using nursing diagnosis on their care plans but that the diagnoses were incomplete. The audit did not address whether the information from the Nursing Care Plan was being transferred to the Nurses' Notes; whether or not the nursing process was being incorporated into the Nursing Care Plan or Nurses' Notes; or how well the Nursing Care Plan was developed. Further confirmation of these findings can be found in the results reported on the Post Implementation of the King Project audits that were conducted in February 1992 (Tables 6 and 7). The results on the nursing diagnosis section of the Post-King audit indicated that nursing staff developed a Nursing Care Plan 100% of the time compared to the 66% in the pre audit, and that the problems on the

Nursing Care Plan were current 100% of the time compared to 51%. It would be interesting to review patient records prior to the introduction of the educational sessions on nursing diagnosis to determine whether or not there was an improvement in the use of the nursing process after the nursing diagnosis classes.

Questions 17, 26 and 30 demonstrated a significantly higher score after the introduction of the King Project. Question 17 related to how well actual nursing diagnoses were documented. The results indicated nurses were better able to write actual problems which included a problem statement, etiology of the problem and signs and symptoms. This significant difference in the nurses' ability to identify all components of an actual problem statement may be related to the fact that the nurses also scored higher on 3, 5, and 6 indicating they were completing more thorough assessments of their patients. The improvement in completed assessments may also have been due to the King Educational Sessions which reviewed data to be collected using King's concepts (1981).

Question 26 related to whether or not the Nursing Care Plan was reviewed on a regular basis and question 30 related to whether the problems from the Nursing

Care Plan were reflected in the Nurses' Notes. This improvement in documentation practice is further validated by the increase in "yes" responses to questions 31, 32, 33, 34, 35 and 36 which indicate the Nurses' Notes reflect evaluation of the patient's problems and progress towards goal attainment. It would stand to reason that if nurses were documenting towards the patient progress that the Nursing Care Plan would be referred to and reviewed.

This was consistent with the results of the Post Implementation of the King Project audit results (Tables 6 and 7). The results of the audit indicated that problems from the Nursing Care Plan were documented on the Nurses' Notes 91% of the time compared to 56% of the time in the pre audit. Overall, the post audits reflected an improvement in the use of the nursing diagnosis but did not indicate whether or not there was an improvement in the use of nursing process.

(See Appendix H for Frequency Table of Raw Data; Appendix I for Data Analyses Results for and After and Before Groups; and Appendix J for Data Analysis Results for General Division Before and After and Henderson Division Before and After.)

Overall, this study indicates there was an improvement in the use of the nursing process with the change in the documentation system.

CHAPTER FIVE: DISCUSSION

Introduction

This study examined whether or not there was a significant change in the use of the nursing process when the documentation system was changed. The literature supports that although the standards of nursing practice for the past two decades have identified that nurses should reflect the use of the nursing process in their documentation this was not evident. The reasons the nursing process was not reflected in documentation practices can be speculated on but had not been empirically studied. The researcher was interested in studying whether a behavioral approach to this issue would influence practice. If the documentation system facilitated the use of the nursing process, would the behavior of the nurses around their documentation practices be modified? The null hypothesis was rejected at a $p > .001$ level of significance indicating that when the documentation system is changed there is evidence that the use of the nursing process will be more evident in

the documentation practices of nursing staff.

Implications For Nursing Administration and Nursing Practice

The decision by the Departments of Nursing to integrate King's Conceptual Framework into the nursing practice of documentation was made to facilitate the changing professional accountability of the nurse. This change involved the education of 1700 nursing staff. To implement this change all nursing staff received four hours of education, Nurse Managers and Clinicians received eight hours of education, and approximately 30 nursing staff were involved in various committees for over four years. To take on this type of challenge has significant cost implications. There was little evidence in the literature to indicate whether or not there was any consequence, such as improved nursing practice or cost savings, to changing the documentation system. This study indicates there was benefit to undertaking a change of this magnitude. This is encouraging for Departments of Nursing who have speculated about the cost effectiveness of undertaking such a project.

King (1994) identifies that:

> The standards of the College of Nurses of Ontario (1988) have been organized around structure, process and outcomes. In addition, situational variables have been included as essential in establishing standards. The Standards of Nursing Practice published by the American Nurses Association (1986) are organized relative to structure, process, and outcomes as guides to establishing measurement criteria in nursing and health care systems. (p. 30)

The standards in both Canada and the United States outline the nurses' responsibility around structure, process, and outcomes. The use of a conceptual framework provides the nurse with a structure for his/her practice. The nursing process provides the means by which the nurse can deliver his/her care. This leaves the question of outcomes. It would be difficult to evaluate outcomes of nursing care without a structure and process in place. King (1994) states:

> How do nurses relate these different elements (such as, standards, performance criteria, nursing process, client outcomes, and theory)

> in a concrete world of nursing practice? If nurses accept the premise that quality of life is multidimensional and health is one of the major factors in a discussion of quality of life, one approach would be to integrate these elements into a conceptual system that provides structure. King's (1981) conceptual framework of three dynamic interacting systems (personal, interpersonal, and social) provides knowledge of specific concepts and a process of human interactions that lead to transactions and to goal attainment...This process helps individuals and groups participate in goal-setting that leads to goal attainment which represents outcomes. When goals are attained, a measure of effective nursing care is demonstrated. (p. 30)

King (1994) further elaborates on her work by stating:

> The process may be used to identify information related to quality of life. Two approaches have been designed: one serves as a guide for developing a documentation system for recording data gathered, and one is a

> goal attainment scale for gathering reliable and valid assessment data...A goal-oriented record was developed as a guide to construct a documentation system that provided a way to organize and record data and progress towards goals...King's Goal Attainment Scale was constructed as one approach to assess functional abilities of individuals to set goals and to measure attainment. (p. 31)

As a result of changing the documentation system at the Hamilton Civic Hospitals they now have a goal attainment record that facilitates the reflection of the nursing process. This provides the Hamilton Civic Hospitals with a means of proceeding with outcome measurement. King (1994) identifies that the "measurement of goal attainment (outcomes) determines effectiveness of nursing care. Effective nursing care leads to `quality improvement' in health which enhances quality of life" (p. 32).

Marek (1989) supports this concept with the statement:

> One problem with the use of nursing diagnosis resolution as an outcome indicator is that all nursing diagnoses are not always

> identified by the nurse in the client record. If nursing diagnoses were identified completely during initial assessment of a client, the resolution of nursing diagnoses at discharge would be a powerful measure in evaluating the outcome of nursing care. (p. 6)

This means that if the patient's record reflected nursing diagnosis and the nursing process it would be easier to evaluate the effectiveness of nursing actions. By evaluating nursing actions it can be determined whether or not what is done actually facilitates the patient's recovery. If a nursing action does not facilitate the patient's recovery perhaps a review is needed. This could have cost and time saving implications.

In a study conducted by Martin, Dugan, Freundl, Miller, Phillips & Sharritts (1994) on nurses' attitudes toward the nursing process it was identified that:

> Direct care nurses exhibited a high knowledge level...and a relatively positive attitude toward the nursing process...Findings also imply a perceived value by nursing

> administration; however, one of the most frequently cited barriers was that nursing care planning was "not valued by RNs"...Less that 30% of the nurses liked the way care planning was done at their hospitals. (p. 39)

These findings by Martin et al. would indicate that nurses value their professional accountability around the use of the nursing process, but they perceive the mechanisms for reflecting the process as having little meaning in practice application.

The results of this study indicate that changing the documentation system can increase the reflection of the nursing process in documentation practices. This may indicate that when the documentation system facilitates the recording of assessment, planning, implementation and evaluation that nurses find the nursing process more meaningful.

Implications For Further Research

The questionnaire used in this study needs further development. There were a number of items on the questionnaire that could not be answered because some

component of the patient record was not complete. To further assess the reliability and validity of the questionnaire it would be worthwhile to repeat this study on patient records that include a completed Nursing Assessment Form, Nursing Care Plan and Nurses' Notes.

Although for decades it has been an expectation in the standards of practice for nurses that the nursing process be reflected in documentation practices, Nursing Administrators could not assume this practice was occurring. Once an organization has determined that their patient records reflect the use of the nursing process then they can move towards the measurement of patient outcomes/goal attainment.

Nursing Administrators must appreciate that change is a process, not an event. It is important that the changes that are implemented are evaluated so that we are accountable for the impact the change has on both cost and human resources. Machiavelli in 1514 stated in The Prince (1981):

> But since it is my intention to write something of use to those who will understand, I deem it best to stick to the practical truth of things rather than to

> fancies. Many have dreamed up republics and principalities which have never in truth been known to exist; the gulf between how one should live and how one does live is so wide that a man who neglects what is actually done for what should be done paves the way to self-destruction rather than self-preservation. (p. 56)

The intent of this study was to look at whether changes to the practice of nursing documentation would facilitate the reflection of the decision-making process used by nurses. The results of this study indicate that the investment of the time and human resources can indeed facilitate the reflection of the nursing process in nursing documentation. When Departments of Nursing facilitate the use of the nursing process they establish the building blocks on which to begin the evaluation of patient outcomes/goal attainment. It will be the evaluation of patient outcomes/goal attainment that will lead nursing to analyze the effectiveness of its nursing practice. The evaluation of the effectiveness of nursing actions will lead nursing to the establishment of the scientific basis for nursing practices.

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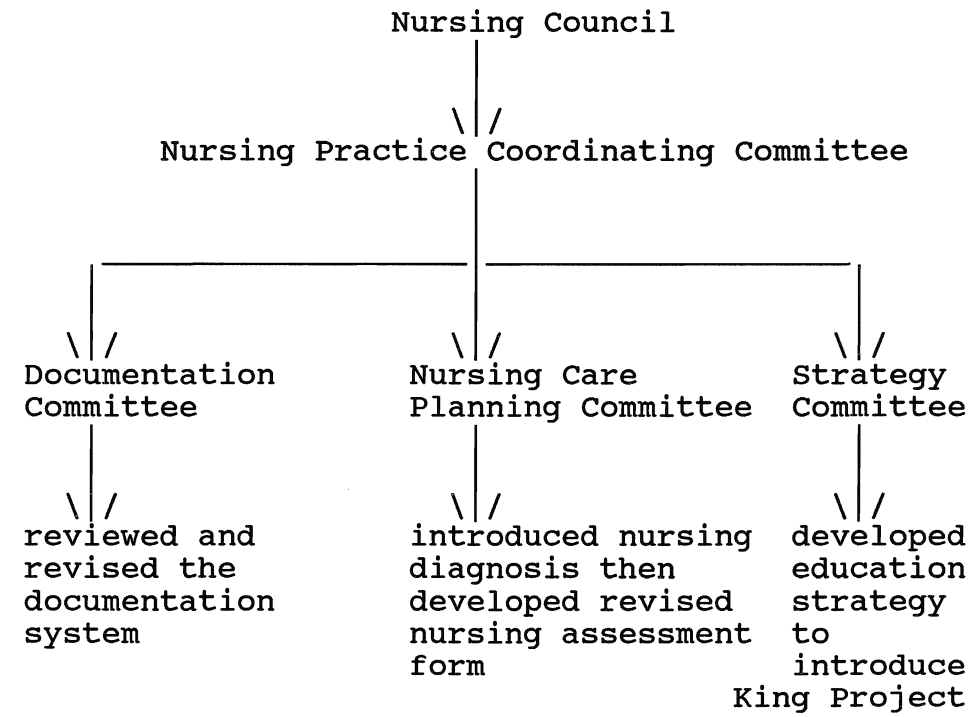
APPENDIX A

Departments of Nursing

Hamilton Civic Hospitals

COMMITTEE STRUCTURE FOR THE KING PROJECT



APPENDIX B

Mann-Whitney U Test On Record Completion Scores

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR
151 CASES
DEPENDENT VARIABLE IS SCORE
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	79	8436.500
BEFORE	72	3039.500

MANN-WHITNEY U TEST STATISTIC = 5276.500
PROBABILITY IS 0.000
CHI-SQUARE APPROXIMATION = 83.697 WITH 1 DF

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
DEPENDENT VARIABLE IS SCORE
GROUPING VARIABLE IS PLACE$

GROUP	COUNT	RANK SUM
G	73	5877.500
H	78	5598.500

MANN-WHITNEY U TEST STATISTIC = 3176.500
PROBABILITY IS 0.215
CHI-SQUARE APPROXIMATION = 1.534 WITH 1 DF

APPENDIX C

Measure of Kurtosis, sample size (N), standard error of the mean (SEM) and standardized kurtosis score for Each Item on the Nursing Documentation System Questionnaire.

SEM = ♦ (24/N)

N.B. The measure of kurtosis is centered around 0.

Thus the standard scores are t scores.

SCORE		KURTOSIS BEFORE	N	SEM	STANDARD
QUES	1	17.893	72	0.577	30.992
QUES	2	1.314	71	0.581	2.260
QUES	3	7.030	70	0.586	12.007
QUES	4	4.635	70	0.586	7.916
QUES	5	25.034	60	0.632	39.583
QUES	6	-1.813	71	0.581	-3.119
QUES	7	-1.823	71	0.581	-3.135
QUES	8	-1.480	44	0.739	-2.005
QUES	9	3.771	43	0.747	5.047
QUES	10	-1.400	72	0.577	-2.425
QUES	11	2.303	34	0.840	2.742
QUES	12	0.000	46	0.722	0.000
QUES	13	-1.972	49	0.700	-2.818
QUES	14	0.000	49	0.700	0.000
QUES	15	2.957	49	0.700	4.225
QUES	16	3.356	45	0.730	4.595
QUES	17	2.957	45	0.730	4.049
QUES	18	-0.689	26	0.961	-0.717
QUES	19	19.786	49	0.700	28.271
QUES	20	1.531	48	0.707	2.165
QUES	21	19.287	48	0.707	27.276
QUES	22	19.543	49	0.700	27.924
QUES	23	-1.001	49	0.700	-1.430
QUES	24	19.543	49	0.700	27.924
QUES	25	-1.292	49	0.700	-1.846
QUES	26	2.450	49	0.700	3.501
QUES	27	6.304	49	0.700	9.008
QUES	28	7.339	49	0.700	10.486
QUES	29	5.914	47	0.715	8.276
QUES	30	-1.318	72	0.577	-2.283
QUES	31	0.000	72	0.577	0.000
QUES	32	67.014	72	0.577	116.072
QUES	33	31.029	72	0.577	53.743
QUES	34	3.143	72	0.577	5.444
QUES	35	19.043	72	0.577	32.984
QUES	36	5.393	72	0.577	9.342
QUES	37	12.063	68	0.594	20.304
QUES	38	0.000	72	0.577	0.000
QUES	39	31.029	72	0.577	53.743
QUES	40	13.059	72	0.577	22.619

SCORE		KURTOSIS AFTER	N	SEM	STANDARD
QUES	1	1.365	79	0.551	2.476
QUES	2	1.810	73	0.573	3.157
QUES	3	-1.011	73	0.573	-1.764
QUES	4	2.488	72	0.577	4.309
QUES	5	-0.504	63	0.617	-0.816
QUES	6	1.555	73	0.573	2.712
QUES	7	-1.777	79	0.551	-3.225
QUES	8	-1.065	33	0.853	-1.249
QUES	9	11.322	32	0.866	13.074
QUES	10	48.872	79	0.551	88.668
QUES	11	-1.648	31	0.880	-1.872
QUES	12	-0.780	75	0.566	-1.379
QUES	13	-1.841	67	0.599	-3.076
QUES	14	73.013	78	0.555	131.626
QUES	15	8.956	78	0.555	16.145
QUES	16	-0.967	75	0.566	-1.710
QUES	17	-0.680	73	0.573	-1.186
QUES	18	-1.595	38	0.795	-2.007
QUES	19	73.013	78	0.555	131.626
QUES	20	1.285	78	0.555	2.317
QUES	21	25.581	78	0.555	46.117
QUES	22	34.261	78	0.555	61.766
QUES	23	-0.090	78	0.555	-0.162
QUES	24	73.013	78	0.555	131.626
QUES	25	-0.012	78	0.555	-0.022
QUES	26	-1.300	78	0.555	-2.344
QUES	27	0.187	77	0.558	0.335
QUES	28	3.284	78	0.555	5.921
QUES	29	1.671	69	0.590	2.833
QUES	30	0.597	78	0.555	1.076
QUES	31	-0.530	79	0.551	-0.961
QUES	32	0.137	79	0.551	0.249
QUES	33	-0.386	79	0.551	-0.700
QUES	34	-1.999	79	0.551	-3.627
QUES	35	-0.642	79	0.551	-1.164
QUES	36	-1.377	79	0.551	-2.498
QUES	37	1.628	58	0.643	2.531
QUES	38	0.000	76	0.562	0.000
QUES	39	4.177	79	0.551	7.579
QUES	40	-0.525	79	0.551	-0.953

APPENDIX D

U Tests for Items Applicable to All Charts

N.B.Higher rank sum scores indicate higher ratings.

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS       Q1
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    5441.000
  BEFORE         72    6035.000
MANN-WHITNEY U TEST STATISTIC =    2281.000
PROBABILITY IS       0.001
CHI-SQUARE APPROXIMATION =      10.216 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 150 CASES
  DEPENDENT VARIABLE IS       Q7
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    5375.000
  BEFORE         71    5950.000
MANN-WHITNEY U TEST STATISTIC =    2215.000
PROBABILITY IS       0.011
CHI-SQUARE APPROXIMATION =       6.441 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q10
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    6852.000
  BEFORE         72    4624.000
MANN-WHITNEY U TEST STATISTIC =    3692.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      24.051 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q31
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    8272.000
  BEFORE         72    3204.000
MANN-WHITNEY U TEST STATISTIC =    5112.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      94.734 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q32
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    8369.500
  BEFORE         72    3106.500
MANN-WHITNEY U TEST STATISTIC =    5209.500
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =     100.732 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q33
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    7116.000
  BEFORE         72    4360.000
MANN-WHITNEY U TEST STATISTIC =    3956.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      31.952 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q34
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    7052.500
  BEFORE         72    4423.500
MANN-WHITNEY U TEST STATISTIC =    3892.500
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      23.456 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q35
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    6895.000
  BEFORE         72    4581.000
MANN-WHITNEY U TEST STATISTIC =    3735.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      22.474 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q36
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    6627.500
  BEFORE         72    4848.500
MANN-WHITNEY U TEST STATISTIC =    3467.500
PROBABILITY IS       0.001
CHI-SQUARE APPROXIMATION =      10.769 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q39
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    6394.000
  BEFORE         72    5082.000
MANN-WHITNEY U TEST STATISTIC =    3234.000
PROBABILITY IS       0.005
CHI-SQUARE APPROXIMATION =       7.859 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 151 CASES
  DEPENDENT VARIABLE IS      Q40
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          79    6530.000
  BEFORE         72    4946.000
MANN-WHITNEY U TEST STATISTIC =    3370.000
PROBABILITY IS       0.002
CHI-SQUARE APPROXIMATION =       9.913 WITH  1 DF
```

GENERAL DIVISION ONLY

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 73 CASES
DEPENDENT VARIABLE IS Q1
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	37	1315.500
BEFORE	36	1385.500

MANN-WHITNEY U TEST STATISTIC = 612.500
PROBABILITY IS 0.177
CHI-SQUARE APPROXIMATION = 1.820 WITH 1 DF

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 73 CASES
DEPENDENT VARIABLE IS Q7
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	37	1036.000
BEFORE	36	1665.000

MANN-WHITNEY U TEST STATISTIC = 333.000
PROBABILITY IS 0.000
CHI-SQUARE APPROXIMATION = 20.257 WITH 1 DF

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 73 CASES
DEPENDENT VARIABLE IS Q10
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	37	1461.500
BEFORE	36	1239.500

MANN-WHITNEY U TEST STATISTIC = 758.500
PROBABILITY IS 0.020
CHI-SQUARE APPROXIMATION = 5.441 WITH 1 DF

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 73 CASES
DEPENDENT VARIABLE IS Q31
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	37	1891.000
BEFORE	36	810.000

MANN-WHITNEY U TEST STATISTIC = 1188.000
PROBABILITY IS 0.000
CHI-SQUARE APPROXIMATION = 44.778 WITH 1 DF

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q32
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1927.000
  BEFORE         36     774.000
MANN-WHITNEY U TEST STATISTIC =    1224.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      49.947 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q33
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1585.000
  BEFORE         36    1116.000
MANN-WHITNEY U TEST STATISTIC =     882.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      13.747 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q34
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1672.500
  BEFORE         36    1028.500
MANN-WHITNEY U TEST STATISTIC =     969.500
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      16.036 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q35
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1476.500
  BEFORE         36    1224.500
MANN-WHITNEY U TEST STATISTIC =     773.500
PROBABILITY IS       0.028
CHI-SQUARE APPROXIMATION =       4.805 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q36
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1673.000
  BEFORE         36    1028.000
MANN-WHITNEY U TEST STATISTIC =     970.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      16.652 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q39
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1513.000
  BEFORE         36    1188.000
MANN-WHITNEY U TEST STATISTIC =     810.000
PROBABILITY IS       0.008
CHI-SQUARE APPROXIMATION =       7.103 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q40
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1549.000
  BEFORE         36    1152.000
MANN-WHITNEY U TEST STATISTIC =     846.000
PROBABILITY IS       0.001
CHI-SQUARE APPROXIMATION =      11.120 WITH  1 DF
```

HENDERSON DIVISION ONLY

```
 KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78 CASES
  DEPENDENT VARIABLE IS       Q1
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1433.500
  BEFORE         36    1647.500
MANN-WHITNEY U TEST STATISTIC =     530.500
PROBABILITY IS       0.004
CHI-SQUARE APPROXIMATION =       8.467 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  77 CASES
  DEPENDENT VARIABLE IS       Q7
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1720.000
  BEFORE         35    1283.000
MANN-WHITNEY U TEST STATISTIC =     817.000
PROBABILITY IS       0.304
CHI-SQUARE APPROXIMATION =       1.057 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78 CASES
  DEPENDENT VARIABLE IS      Q10
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    2010.000
  BEFORE         36    1071.000
MANN-WHITNEY U TEST STATISTIC =    1107.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      21.544 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78 CASES
  DEPENDENT VARIABLE IS      Q31
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    2271.000
  BEFORE         36     810.000
MANN-WHITNEY U TEST STATISTIC =    1368.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      49.277 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78 CASES
  DEPENDENT VARIABLE IS      Q32
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    2283.500
  BEFORE         36     797.500
MANN-WHITNEY U TEST STATISTIC =    1380.500
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      50.169 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78 CASES
  DEPENDENT VARIABLE IS      Q33
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1997.000
  BEFORE         36    1084.000
MANN-WHITNEY U TEST STATISTIC =    1094.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      18.218 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78
 CASES
  DEPENDENT VARIABLE IS      Q34
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1881.000
  BEFORE         36    1200.000
MANN-WHITNEY U TEST STATISTIC =     978.000
PROBABILITY IS       0.004
CHI-SQUARE APPROXIMATION =       8.387 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78  CASES
  DEPENDENT VARIABLE IS      Q35
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1996.000
  BEFORE         36    1085.000
MANN-WHITNEY U TEST STATISTIC =    1093.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      18.195 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78  CASES
  DEPENDENT VARIABLE IS      Q36
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1668.000
  BEFORE         36    1413.000
MANN-WHITNEY U TEST STATISTIC =     765.000
PROBABILITY IS       0.855
CHI-SQUARE APPROXIMATION =       0.033 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78 CASES
  DEPENDENT VARIABLE IS      Q39
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1710.000
  BEFORE         36    1371.000
MANN-WHITNEY U TEST STATISTIC =     807.000
PROBABILITY IS       0.228
CHI-SQUARE APPROXIMATION =       1.452 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  78 CASES
  DEPENDENT VARIABLE IS      Q40
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          42    1737.000
  BEFORE         36    1344.000
MANN-WHITNEY U TEST STATISTIC =     834.000
PROBABILITY IS       0.226
CHI-SQUARE APPROXIMATION =       1.467 WITH  1 DF
```

APPENDIX E

Mann-Whitney U Tests for Items Not Applicable to All Charts

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 144 CASES
  DEPENDENT VARIABLE IS       Q2
  GROUPING VARIABLE IS      GRP$
    GROUP       COUNT   RANK SUM
  AFTER           73    5267.500
  BEFORE          71    5172.500
MANN-WHITNEY U TEST STATISTIC =    2566.500
PROBABILITY IS       0.896
CHI-SQUARE APPROXIMATION =       0.017 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 143 CASES
  DEPENDENT VARIABLE IS       Q3
  GROUPING VARIABLE IS      GRP$
    GROUP       COUNT   RANK SUM
  AFTER           73    6192.000
  BEFORE          70    4104.000
MANN-WHITNEY U TEST STATISTIC =    3491.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      21.374 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 142 CASES
  DEPENDENT VARIABLE IS       Q4
  GROUPING VARIABLE IS      GRP$
    GROUP       COUNT   RANK SUM
  AFTER           72    5148.000
  BEFORE          70    5005.000
MANN-WHITNEY U TEST STATISTIC =    2520.000
PROBABILITY IS       1.000
CHI-SQUARE APPROXIMATION =       0.000 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 123 CASES
  DEPENDENT VARIABLE IS       Q5
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          63    4602.000
  BEFORE         60    3024.000
MANN-WHITNEY U TEST STATISTIC =    2586.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      23.801 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 144 CASES
  DEPENDENT VARIABLE IS       Q6
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          73    5910.000
  BEFORE         71    4530.000
MANN-WHITNEY U TEST STATISTIC =    3209.000
PROBABILITY IS       0.002
CHI-SQUARE APPROXIMATION =       9.938 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  77 CASES
  DEPENDENT VARIABLE IS       Q8
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          33    1454.000
  BEFORE         44    1549.000
MANN-WHITNEY U TEST STATISTIC =     893.000
PROBABILITY IS       0.065
CHI-SQUARE APPROXIMATION =       3.395 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  75 CASES
  DEPENDENT VARIABLE IS       Q9
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          32    1277.000
  BEFORE         43    1573.000
MANN-WHITNEY U TEST STATISTIC =     749.000
PROBABILITY IS       0.287
CHI-SQUARE APPROXIMATION =       1.133 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  65 CASES
  DEPENDENT VARIABLE IS      Q11
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          31     798.500
  BEFORE         34    1346.500
MANN-WHITNEY U TEST STATISTIC =     302.500
PROBABILITY IS       0.001
CHI-SQUARE APPROXIMATION =      11.322 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 121 CASES
  DEPENDENT VARIABLE IS      Q12
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          75    5035.000
  BEFORE         46    2346.000
MANN-WHITNEY U TEST STATISTIC =    2185.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      14.552 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 116 CASES
  DEPENDENT VARIABLE IS      Q13
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          67    3932.500
  BEFORE         49    2853.500
MANN-WHITNEY U TEST STATISTIC =    1654.500
PROBABILITY IS       0.936
CHI-SQUARE APPROXIMATION =       0.007 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q15
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    5165.000
  BEFORE         49    2963.000
MANN-WHITNEY U TEST STATISTIC =    2084.000
PROBABILITY IS       0.167
CHI-SQUARE APPROXIMATION =       1.914 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 120 CASES
  DEPENDENT VARIABLE IS      Q16
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          75    4179.500
  BEFORE         45    3080.500
MANN-WHITNEY U TEST STATISTIC =    1329.500
PROBABILITY IS       0.018
CHI-SQUARE APPROXIMATION =       5.596 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 118 CASES
  DEPENDENT VARIABLE IS      Q17
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          73    3934.000
  BEFORE         45    3087.000
MANN-WHITNEY U TEST STATISTIC =    1233.000
PROBABILITY IS       0.007
CHI-SQUARE APPROXIMATION =       7.182 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  64 CASES
  DEPENDENT VARIABLE IS      Q18
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          38    1191.000
  BEFORE         26     889.000
MANN-WHITNEY U TEST STATISTIC =     450.000
PROBABILITY IS       0.501
CHI-SQUARE APPROXIMATION =       0.452 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q19
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    5085.000
  BEFORE         49    3043.000
MANN-WHITNEY U TEST STATISTIC =    2004.000
PROBABILITY IS       0.128
CHI-SQUARE APPROXIMATION =       2.318 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 126 CASES
  DEPENDENT VARIABLE IS      Q20
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    4971.000
  BEFORE         48    3030.000
MANN-WHITNEY U TEST STATISTIC =    1890.000
PROBABILITY IS       0.903
CHI-SQUARE APPROXIMATION =       0.015 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 126 CASES
  DEPENDENT VARIABLE IS      Q21
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    4931.500
  BEFORE         48    3069.500
MANN-WHITNEY U TEST STATISTIC =    1850.500
PROBABILITY IS       0.786
CHI-SQUARE APPROXIMATION =       0.074 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q22
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    4995.500
  BEFORE         49    3132.500
MANN-WHITNEY U TEST STATISTIC =    1914.500
PROBABILITY IS       0.959
CHI-SQUARE APPROXIMATION =       0.003 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q23
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    5234.000
  BEFORE         49    2894.000
MANN-WHITNEY U TEST STATISTIC =    2153.000
PROBABILITY IS       0.169
CHI-SQUARE APPROXIMATION =       1.892 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q24
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    4938.500
  BEFORE         49    3189.500
MANN-WHITNEY U TEST STATISTIC =    1857.500
PROBABILITY IS       0.314
CHI-SQUARE APPROXIMATION =       1.015 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q25
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    5140.000
  BEFORE         49    2988.000
MANN-WHITNEY U TEST STATISTIC =    2059.000
PROBABILITY IS       0.377
CHI-SQUARE APPROXIMATION =       0.782 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q26
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    6109.500
  BEFORE         49    2018.500
MANN-WHITNEY U TEST STATISTIC =    3028.500
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      35.475 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 126 CASES
  DEPENDENT VARIABLE IS      Q27
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          77    5166.000
  BEFORE         49    2835.000
MANN-WHITNEY U TEST STATISTIC =    2163.000
PROBABILITY IS       0.057
CHI-SQUARE APPROXIMATION =       3.635 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 127 CASES
  DEPENDENT VARIABLE IS      Q28
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    5191.000
  BEFORE         49    2937.000
MANN-WHITNEY U TEST STATISTIC =    2110.000
PROBABILITY IS       0.104
CHI-SQUARE APPROXIMATION =       2.648 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 116 CASES
  DEPENDENT VARIABLE IS      Q29
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          69    4234.500
  BEFORE         47    2551.500
MANN-WHITNEY U TEST STATISTIC =    1819.500
PROBABILITY IS       0.114
CHI-SQUARE APPROXIMATION =       2.493 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 150 CASES
  DEPENDENT VARIABLE IS      Q30
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          78    7344.000
  BEFORE         72    3981.000
MANN-WHITNEY U TEST STATISTIC =    4263.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      34.861 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 126 CASES
  DEPENDENT VARIABLE IS      Q37
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          58    3873.000
  BEFORE         68    4128.000
MANN-WHITNEY U TEST STATISTIC =    2162.000
PROBABILITY IS       0.078
CHI-SQUARE APPROXIMATION =       3.115 WITH  1 DF
```

GENERAL DIVISION ONLY

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 73 CASES
DEPENDENT VARIABLE IS Q2
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	37	1373.500
BEFORE	36	1327.500

MANN-WHITNEY U TEST STATISTIC = 670.500
PROBABILITY IS 0.947
CHI-SQUARE APPROXIMATION = 0.004 WITH 1 DF

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 73 CASES
DEPENDENT VARIABLE IS Q3
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	37	1801.000
BEFORE	36	900.000

MANN-WHITNEY U TEST STATISTIC = 1098.000
PROBABILITY IS 0.000
CHI-SQUARE APPROXIMATION = 29.005 WITH 1 DF

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 73 CASES
DEPENDENT VARIABLE IS Q4
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	37	1438.500
BEFORE	36	1262.500

MANN-WHITNEY U TEST STATISTIC = 735.500
PROBABILITY IS 0.199
CHI-SQUARE APPROXIMATION = 1.649 WITH 1 DF

KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR 66 CASES
DEPENDENT VARIABLE IS Q5
GROUPING VARIABLE IS GRP$

GROUP	COUNT	RANK SUM
AFTER	32	1400.000
BEFORE	34	811.000

MANN-WHITNEY U TEST STATISTIC = 872.000
PROBABILITY IS 0.000
CHI-SQUARE APPROXIMATION = 26.285 WITH 1 DF

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS       Q6
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1463.500
  BEFORE         36    1237.500
MANN-WHITNEY U TEST STATISTIC =     760.500
PROBABILITY IS       0.116
CHI-SQUARE APPROXIMATION =       2.475 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  51 CASES
  DEPENDENT VARIABLE IS       Q8
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          16     449.000
  BEFORE         35     877.000
MANN-WHITNEY U TEST STATISTIC =     313.000
PROBABILITY IS       0.474
CHI-SQUARE APPROXIMATION =       0.512 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  50 CASES
  DEPENDENT VARIABLE IS       Q9
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          16     439.000
  BEFORE         34     836.000
MANN-WHITNEY U TEST STATISTIC =     303.000
PROBABILITY IS       0.283
CHI-SQUARE APPROXIMATION =       1.150 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  45 CASES
  DEPENDENT VARIABLE IS      Q11
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          16     266.000
  BEFORE         29     769.000
MANN-WHITNEY U TEST STATISTIC =     130.000
PROBABILITY IS       0.002
CHI-SQUARE APPROXIMATION =       9.230 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  65 CASES
  DEPENDENT VARIABLE IS      Q12
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          36    1246.000
  BEFORE         29     899.000
MANN-WHITNEY U TEST STATISTIC =     580.000
PROBABILITY IS       0.066
CHI-SQUARE APPROXIMATION =       3.378 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  65 CASES
  DEPENDENT VARIABLE IS      Q13
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          34    1146.000
  BEFORE         31     999.000
MANN-WHITNEY U TEST STATISTIC =     551.000
PROBABILITY IS       0.727
CHI-SQUARE APPROXIMATION =       0.122 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q15
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1294.500
  BEFORE         31    1051.500
MANN-WHITNEY U TEST STATISTIC =     591.500
PROBABILITY IS       0.738
CHI-SQUARE APPROXIMATION =       0.112 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  63 CASES
  DEPENDENT VARIABLE IS      Q16
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          34     963.000
  BEFORE         29    1053.000
MANN-WHITNEY U TEST STATISTIC =     368.000
PROBABILITY IS       0.044
CHI-SQUARE APPROXIMATION =       4.062 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  63 CASES
  DEPENDENT VARIABLE IS      Q17
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          34     948.500
  BEFORE         29    1067.500
MANN-WHITNEY U TEST STATISTIC =     353.500
PROBABILITY IS       0.028
CHI-SQUARE APPROXIMATION =       4.848 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  36 CASES
  DEPENDENT VARIABLE IS      Q18
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          20     344.000
  BEFORE         16     322.000
MANN-WHITNEY U TEST STATISTIC =     134.000
PROBABILITY IS       0.339
CHI-SQUARE APPROXIMATION =       0.914 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q19
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1298.500
  BEFORE         31    1047.500
MANN-WHITNEY U TEST STATISTIC =     595.500
PROBABILITY IS       0.446
CHI-SQUARE APPROXIMATION =       0.580 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  67 CASES
  DEPENDENT VARIABLE IS      Q20
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1228.000
  BEFORE         30    1050.000
MANN-WHITNEY U TEST STATISTIC =     525.000
PROBABILITY IS       0.557
CHI-SQUARE APPROXIMATION =       0.345 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  67 CASES
  DEPENDENT VARIABLE IS      Q21
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1251.000
  BEFORE         30    1027.000
MANN-WHITNEY U TEST STATISTIC =     548.000
PROBABILITY IS       0.830
CHI-SQUARE APPROXIMATION =       0.046 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q22
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1248.000
  BEFORE         31    1098.000
MANN-WHITNEY U TEST STATISTIC =     545.000
PROBABILITY IS       0.389
CHI-SQUARE APPROXIMATION =       0.741 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q23
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1332.000
  BEFORE         31    1014.000
MANN-WHITNEY U TEST STATISTIC =     629.000
PROBABILITY IS       0.432
CHI-SQUARE APPROXIMATION =       0.617 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q24
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1255.000
  BEFORE         31    1091.000
MANN-WHITNEY U TEST STATISTIC =     552.000
PROBABILITY IS       0.457
CHI-SQUARE APPROXIMATION =       0.554 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q25
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1367.000
  BEFORE         31     979.000
MANN-WHITNEY U TEST STATISTIC =     664.000
PROBABILITY IS       0.186
CHI-SQUARE APPROXIMATION =       1.753 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q26
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1578.000
  BEFORE         31     768.000
MANN-WHITNEY U TEST STATISTIC =     875.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      16.578 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  67 CASES
  DEPENDENT VARIABLE IS      Q27
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          36    1276.500
  BEFORE         31    1001.500
MANN-WHITNEY U TEST STATISTIC =     610.500
PROBABILITY IS       0.351
CHI-SQUARE APPROXIMATION =       0.869 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  68 CASES
  DEPENDENT VARIABLE IS      Q28
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1289.000
  BEFORE         31    1057.000
MANN-WHITNEY U TEST STATISTIC =     586.000
PROBABILITY IS       0.665
CHI-SQUARE APPROXIMATION =       0.187 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  60 CASES
  DEPENDENT VARIABLE IS      Q29
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          32    1041.000
  BEFORE         28     789.000
MANN-WHITNEY U TEST STATISTIC =     513.000
PROBABILITY IS       0.192
CHI-SQUARE APPROXIMATION =       1.700 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  73 CASES
  DEPENDENT VARIABLE IS      Q30
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1676.500
  BEFORE         36    1024.500
MANN-WHITNEY U TEST STATISTIC =     973.500
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      13.981 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  61 CASES
  DEPENDENT VARIABLE IS      Q37
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          27     902.000
  BEFORE         34     989.000
MANN-WHITNEY U TEST STATISTIC =     524.000
PROBABILITY IS       0.156
CHI-SQUARE APPROXIMATION =       2.008 WITH  1 DF
```

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```
 KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  71 CASES
  DEPENDENT VARIABLE IS       Q2
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          36    1279.000
  BEFORE         35    1277.000
MANN-WHITNEY U TEST STATISTIC =     613.000
PROBABILITY IS       0.800
CHI-SQUARE APPROXIMATION =       0.064 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  70 CASES
  DEPENDENT VARIABLE IS       Q3
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          36    1335.000
  BEFORE         34    1150.000
MANN-WHITNEY U TEST STATISTIC =     669.000
PROBABILITY IS       0.337
CHI-SQUARE APPROXIMATION =       0.923 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  69 CASES
  DEPENDENT VARIABLE IS       Q4
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          35    1159.000
  BEFORE         34    1256.000
MANN-WHITNEY U TEST STATISTIC =     529.000
PROBABILITY IS       0.230
CHI-SQUARE APPROXIMATION =       1.444 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  57 CASES
  DEPENDENT VARIABLE IS       Q5
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          31     949.000
  BEFORE         26     704.000
MANN-WHITNEY U TEST STATISTIC =     453.000
PROBABILITY IS       0.132
CHI-SQUARE APPROXIMATION =       2.267 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  71 CASES
  DEPENDENT VARIABLE IS       Q6
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          36    1506.000
  BEFORE         35    1050.000
MANN-WHITNEY U TEST STATISTIC =     840.000
PROBABILITY IS       0.005
CHI-SQUARE APPROXIMATION =       8.068 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  26 CASES
  DEPENDENT VARIABLE IS       Q8
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          17     228.000
  BEFORE          9     123.000
MANN-WHITNEY U TEST STATISTIC =      75.000
PROBABILITY IS       0.922
CHI-SQUARE APPROXIMATION =       0.010 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  25 CASES
  DEPENDENT VARIABLE IS       Q9
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          16     215.000
  BEFORE          9     110.000
MANN-WHITNEY U TEST STATISTIC =      79.000
PROBABILITY IS       0.534
CHI-SQUARE APPROXIMATION =       0.386 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  20 CASES
  DEPENDENT VARIABLE IS      Q11
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          15     154.500
  BEFORE          5      55.500
MANN-WHITNEY U TEST STATISTIC =      34.500
PROBABILITY IS       0.778
CHI-SQUARE APPROXIMATION =       0.080 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  56 CASES
  DEPENDENT VARIABLE IS      Q12
  GROUPING VARIABLE IS      GRP$
    GROUP       COUNT   RANK SUM
  AFTER           39    1247.500
  BEFORE          17     348.500
MANN-WHITNEY U TEST STATISTIC =     467.500
PROBABILITY IS       0.002
CHI-SQUARE APPROXIMATION =       9.590 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  51 CASES
  DEPENDENT VARIABLE IS      Q13
  GROUPING VARIABLE IS      GRP$
    GROUP       COUNT   RANK SUM
  AFTER           33     840.000
  BEFORE          18     486.000
MANN-WHITNEY U TEST STATISTIC =     279.000
PROBABILITY IS       0.690
CHI-SQUARE APPROXIMATION =       0.159 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q15
  GROUPING VARIABLE IS      GRP$
    GROUP       COUNT   RANK SUM
  AFTER           41    1286.000
  BEFORE          18     484.000
MANN-WHITNEY U TEST STATISTIC =     425.000
PROBABILITY IS       0.100
CHI-SQUARE APPROXIMATION =       2.698 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  57 CASES
  DEPENDENT VARIABLE IS      Q16
  GROUPING VARIABLE IS      GRP$
    GROUP       COUNT   RANK SUM
  AFTER           41    1118.000
  BEFORE          16     535.000
MANN-WHITNEY U TEST STATISTIC =     257.000
PROBABILITY IS       0.102
CHI-SQUARE APPROXIMATION =       2.670 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  55 CASES
  DEPENDENT VARIABLE IS      Q17
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          39    1008.000
  BEFORE         16     532.000
MANN-WHITNEY U TEST STATISTIC =     228.000
PROBABILITY IS       0.054
CHI-SQUARE APPROXIMATION =       3.706 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  28 CASES
  DEPENDENT VARIABLE IS      Q18
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          18     264.000
  BEFORE         10     142.000
MANN-WHITNEY U TEST STATISTIC =      93.000
PROBABILITY IS       0.876
CHI-SQUARE APPROXIMATION =       0.025 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q19
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1250.500
  BEFORE         18     519.500
MANN-WHITNEY U TEST STATISTIC =     389.500
PROBABILITY IS       0.131
CHI-SQUARE APPROXIMATION =       2.278 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q20
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1282.000
  BEFORE         18     488.000
MANN-WHITNEY U TEST STATISTIC =     421.000
PROBABILITY IS       0.299
CHI-SQUARE APPROXIMATION =       1.078 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q21
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1227.000
  BEFORE         18     543.000
MANN-WHITNEY U TEST STATISTIC =     366.000
PROBABILITY IS       0.897
CHI-SQUARE APPROXIMATION =       0.017 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q22
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1250.500
  BEFORE         18     519.500
MANN-WHITNEY U TEST STATISTIC =     389.500
PROBABILITY IS       0.131
CHI-SQUARE APPROXIMATION =       2.278 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q23
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1296.500
  BEFORE         18     473.500
MANN-WHITNEY U TEST STATISTIC =     435.500
PROBABILITY IS       0.209
CHI-SQUARE APPROXIMATION =       1.581 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q24
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1230.000
  BEFORE         18     540.000
MANN-WHITNEY U TEST STATISTIC =     369.000
PROBABILITY IS       1.000
CHI-SQUARE APPROXIMATION =       0.000 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q25
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1227.000
  BEFORE         18     543.000
MANN-WHITNEY U TEST STATISTIC =     366.000
PROBABILITY IS       0.952
CHI-SQUARE APPROXIMATION =       0.004 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q26
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1474.500
  BEFORE         18     295.500
MANN-WHITNEY U TEST STATISTIC =     613.500
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      18.322 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q27
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1306.000
  BEFORE         18     464.000
MANN-WHITNEY U TEST STATISTIC =     445.000
PROBABILITY IS       0.092
CHI-SQUARE APPROXIMATION =       2.834 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  59 CASES
  DEPENDENT VARIABLE IS      Q28
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    1285.500
  BEFORE         18     484.500
MANN-WHITNEY U TEST STATISTIC =     424.500
PROBABILITY IS       0.231
CHI-SQUARE APPROXIMATION =       1.437 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  56 CASES
  DEPENDENT VARIABLE IS      Q29
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          37    1094.500
  BEFORE         19     501.500
MANN-WHITNEY U TEST STATISTIC =     391.500
PROBABILITY IS       0.298
CHI-SQUARE APPROXIMATION =       1.085 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  77 CASES
  DEPENDENT VARIABLE IS      Q30
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          41    2034.000
  BEFORE         36     969.000
MANN-WHITNEY U TEST STATISTIC =    1173.000
PROBABILITY IS       0.000
CHI-SQUARE APPROXIMATION =      22.469 WITH  1 DF
```

```
KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE FOR  65 CASES
  DEPENDENT VARIABLE IS      Q37
  GROUPING VARIABLE IS      GRP$
    GROUP      COUNT   RANK SUM
  AFTER          31    1057.000
  BEFORE         34    1088.000
MANN-WHITNEY U TEST STATISTIC =     561.000
PROBABILITY IS       0.135
CHI-SQUARE APPROXIMATION =       2.228 WITH  1 DF
```

APPENDIX F

Data

QUES1 to QUES40 Refers to Questions 1 to 40
N = Never, S = Sometimes, A = Always

		QUES1	QUES2	QUES3	QUES4	QUES5
CASE	1	S	A	A	A	A
CASE	2	S	S	S	S	N
CASE	3	A	N	S	A	A
CASE	4	A	N	A	S	S
CASE	5	A	N	N	S	N
CASE	6	A	S	A	S	A
CASE	7	A	N	N	S	N
CASE	8	S	N	N	N	N
CASE	9	A	N	S	S	N
CASE	10	A	N	N	S	N
CASE	11	A	N	S	A	A
CASE	12	A	S	A	S	N
CASE	13	A	N	A	S	
CASE	14	A	N	S	S	N
CASE	15	A	N	N	S	N
CASE	16	A	N	A	S	A
CASE	17	A	N	S	S	N
CASE	18	A	N	A	S	S
CASE	19	A	N	S	S	S
CASE	20	A	N	S	S	S
CASE	21	A	N	S	S	S
CASE	22	A	N	S	S	S
CASE	23	S	N	N	N	N
CASE	24	A	N	N	S	S
CASE	25	A	N	N	S	
CASE	26	A	A	A	N	N
CASE	27	A	S	S	S	S
CASE	28	A	N	N	A	A
CASE	29	A	N	S	S	S
CASE	30	A	A	A	S	A
CASE	31	A	N	A	A	
CASE	32	A	S	S	S	S
CASE	33	A	N	S	S	A
CASE	34	A	N	S	S	
CASE	35	A	N	N	S	S
CASE	36	A	N	S	S	S
CASE	37	A	S	S	A	
CASE	38	A	S	N	S	N
CASE	39	A	N	N	N	S
CASE	40	A	N	S	S	N
CASE	41	A	N	N	S	N
CASE	42	A	N	N	S	
CASE	43	A	S	N	S	N
CASE	44	A	N	N	S	N
CASE	45	A	N	N	S	N
CASE	46	A	N	N	S	N

	QUES1	QUES2	QUES3	QUES4	QUES5
CASE 47	A	N	N	S	N
CASE 48	A	N	N	S	
CASE 49	A	N	N	S	N
CASE 50	A	N	N	S	N
CASE 51	A	S	N	S	N
CASE 52	A	N	N	S	N
CASE 53	S	N	N	S	N
CASE 54	A	N	N	S	N
CASE 55	A	N	N	S	N
CASE 56	A	N	N	S	N
CASE 57	A	N	N	S	N
CASE 58	A	N	N	S	N
CASE 59	A	N	N	S	N
CASE 60	A	S	N	S	N
CASE 61	A	N	N	S	N
CASE 62	A	N	N	S	N
CASE 63	A	N	N	S	N
CASE 64	A	N	N	S	N
CASE 65	A	N	N	S	N
CASE 66	A	N	N	S	N
CASE 67	A	N	N	S	N
CASE 68	A	A	N	S	N
CASE 69	A	S	S	S	N
CASE 70	A	S	S	S	N
CASE 71	A	S	S	S	N
CASE 72	A	S	N	S	N
CASE 73	A	N	N	S	N
CASE 74	A	N	A	S	N
CASE 75	S	N	N	S	N
CASE 76	A	A	N	S	N
CASE 77	N				
CASE 78	A	S	N	S	S
CASE 79	A	N	S	S	N
CASE 80	A	N	N	S	
CASE 81	A	S	N	S	N
CASE 82	S	N	N	S	N
CASE 83	A	S	A	S	
CASE 84	N				
CASE 85	A	N	N	S	N
CASE 86	A	N	N	S	N
CASE 87	A	S	S	S	S
CASE 88	A	S	N	S	N
CASE 89	A	N	N	S	N
CASE 90	A	N	N	S	N
CASE 91	A	N	N	S	N
CASE 92	A	N	N	S	N

	QUES1	QUES2	QUES3	QUES4	QUES5
CASE 93	A	N	N	A	
CASE 94	N				
CASE 95	A	N	N	S	N
CASE 96	A	N	N		A
CASE 97	S	N	N	S	N
CASE 98	A	S	S	S	N
CASE 99	A	N	N	N	N
CASE 100	S	N	N	S	N
CASE 101	S	N	N	S	N
CASE 102	S	N	S	N	N
CASE 103	S	N	N	S	N
CASE 104	S	N	S	S	S
CASE 105	A	N	N	S	N
CASE 106	S	N	N	S	
CASE 107	A	N	N	S	N
CASE 108	S	N	S	S	N
CASE 109	A	N	N	S	N
CASE 110	N				
CASE 111	A	N	A	S	S
CASE 112	N				
CASE 113	N				
CASE 114	S	S	N	S	N
CASE 115	A	A	N	A	
CASE 116	A	N	N	S	N
CASE 117	A	N	N	S	N
CASE 118	A	N	N		
CASE 119	A	N	N	A	
CASE 120	A	N	N	A	
CASE 121	A	S		S	
CASE 122	A	N	A	S	N
CASE 123	S	N	N	N	N
CASE 124	A	S	N	N	N
CASE 125	A	S	N	S	N
CASE 126	A	N	N	S	N
CASE 127	A	N	N	S	N
CASE 128	A	N	A	S	N
CASE 129	A	N	N	S	S
CASE 130	A	N	N	S	N
CASE 131	A	N	N	S	N
CASE 132	A	S	A	S	N
CASE 133	A	N	N	A	
CASE 134	A	S	N	S	N
CASE 135	A	N	N	S	N
CASE 136	A	S	N	S	N
CASE 137	S	S	N	A	
CASE 138	A	N	N	S	N

	QUES1	QUES2	QUES3	QUES4	QUES5
CASE 139	A	N	N	S	N
CASE 140	A	S	S	A	
CASE 141	A	N	N	S	N
CASE 142	S	N	N	S	N
CASE 143	A	S	N	S	N
CASE 144	A	N	N	S	N
CASE 145	A	N	N	A	
CASE 146	A	A	S	S	N
CASE 147	N				
CASE 148	A	N	N	S	N
CASE 149	A	N	N	S	
CASE 150	A	N	N	S	N
CASE 151	A	N	N	S	N

		QUES6	QUES7	QUES8	QUES9	QUES10
CASE	1	S	A	A	A	A
CASE	2	N	N			A
CASE	3	S	N			A
CASE	4	S	N			A
CASE	5	S	N			A
CASE	6	S	N			A
CASE	7	S	N			A
CASE	8	S	A	N	S	A
CASE	9	S	N			A
CASE	10	S	N			A
CASE	11	S	N			A
CASE	12	S	A	N	A	A
CASE	13	S	N			A
CASE	14	S	A	A	A	A
CASE	15	S	A	N	A	A
CASE	16	S	A	A	A	A
CASE	17	S	N			A
CASE	18	S	A	A	A	A
CASE	19	S	A	A	A	A
CASE	20	S	N			A
CASE	21	S	A	A	A	A
CASE	22	S	N			A
CASE	23	N	A	A	A	A
CASE	24	S	N			A
CASE	25	S	N			A
CASE	26	N	A	N	A	A
CASE	27	S	N			A
CASE	28	S	N			A
CASE	29	S	N			A
CASE	30	S	A	A	A	A
CASE	31	S	N			A
CASE	32	S	A	S	A	A
CASE	33	S	N			A
CASE	34	N	A	N	A	A
CASE	35	S	N			A
CASE	36	S	A	N	A	A
CASE	37	S	A	N	A	A
CASE	38	N	A	N	S	A
CASE	39	N	A	S	S	A
CASE	40	S	A	S	A	A
CASE	41	S	A	N	A	A
CASE	42	S	A	A	A	A
CASE	43	S	A	S	A	A
CASE	44	S	A	S	A	A
CASE	45	S	A	A	S	A
CASE	46	S	A	A	A	A

	QUES6	QUES7	QUES8	QUES9	QUES10
CASE 47	N	N			A
CASE 48	S	A	S	S	A
CASE 49	N	A	N	A	A
CASE 50	N	A	N	A	A
CASE 51	S	A	A	A	A
CASE 52	N	A	S	A	A
CASE 53	S	A	S	A	A
CASE 54	S	A	A	A	A
CASE 55	S	A	N	S	N
CASE 56	S	A	N	A	A
CASE 57	S	A	N	A	A
CASE 58	S	A	A	A	A
CASE 59	S	A	N	A	A
CASE 60	S	A	A	A	A
CASE 61	N	N	N		A
CASE 62	S	A	N	A	N
CASE 63	S	A	S	A	A
CASE 64	N	A	S	A	N
CASE 65	S	A	S	A	A
CASE 66	S	A	A	A	A
CASE 67	S	A	S	A	A
CASE 68	S	A	A	S	A
CASE 69	N	A	N	A	N
CASE 70	S	A	S	A	A
CASE 71	S	S	N	A	A
CASE 72	S	A	N	A	N
CASE 73	S	A	N	A	A
CASE 74	S	A	A	A	A
CASE 75	S	A	A	A	S
CASE 76	A	A	S	A	A
CASE 77		N			A
CASE 78	S	A	A	A	A
CASE 79	S	N			A
CASE 80	N	N			A
CASE 81	S	A	A	A	A
CASE 82	S	S	S	A	A
CASE 83	N	N			A
CASE 84		N			A
CASE 85	S	N			A
CASE 86	S	S	S	N	A
CASE 87	S	A	A	A	A
CASE 88	S	N			A
CASE 89	S	N			A
CASE 90	S	A	S	A	A
CASE 91	S	N			A
CASE 92	S	N			A

	QUES6	QUES7	QUES8	QUES9	QUES10
CASE 93	N	N			A
CASE 94		N			A
CASE 95	S	A	A	A	A
CASE 96	N	N			A
CASE 97	S	N			A
CASE 98	N	A	S		A
CASE 99	S	N			A
CASE 100	N	N			A
CASE 101	S	A	A	A	A
CASE 102	S	N			A
CASE 103	S	A	A	A	A
CASE 104	S	A	A	A	A
CASE 105	S	N			A
CASE 106	N	N			A
CASE 107	N	N			A
CASE 108	S	N	A	A	A
CASE 109	S	N			A
CASE 110		N			N
CASE 111	S	N			A
CASE 112		N			A
CASE 113		N			A
CASE 114	S	A	S	S	A
CASE 115	S	A	A	A	A
CASE 116	N	N			A
CASE 117	N	N			A
CASE 118	N	N			A
CASE 119	S	N			N
CASE 120	S	N			A
CASE 121	S	N			A
CASE 122	N	N			N
CASE 123	N	A	S	A	N
CASE 124	N	N			A
CASE 125	S	N			A
CASE 126	N	N			A
CASE 127	S	N			A
CASE 128	S	N			N
CASE 129	N	N			N
CASE 130	N	N			N
CASE 131	N	A	A	A	A
CASE 132	S	N			N
CASE 133	S	N			A
CASE 134	N	A	A	S	A
CASE 135	N	A	S	A	N
CASE 136	S	N			N
CASE 137	S	A	A	A	N
CASE 138	S	N			A

	QUES6	QUES7	QUES8	QUES9	QUES10
CASE 139	S	N			A
CASE 140	N	N			N
CASE 141	N	A	A	A	A
CASE 142	S	N			N
CASE 143	N	N			N
CASE 144	N	N			A
CASE 145	N	A	S	A	N
CASE 146	S	N			N
CASE 147					N
CASE 148	N	N			N
CASE 149	S	N			N
CASE 150	N	A	A	N	A
CASE 151	S	A	A	A	A

		QUES11	QUES12	QUES13	QUES14	QUES15
CASE	1	S	N	A	A	N
CASE	2		A		A	A
CASE	3		N	N	A	A
CASE	4		N	N	A	A
CASE	5		N		A	A
CASE	6		S	A	A	A
CASE	7		N	N	A	A
CASE	8	N	N	N	A	S
CASE	9		N	S	A	A
CASE	10		N	S	A	A
CASE	11		N	N	A	A
CASE	12	N	N	N	A	A
CASE	13		N	N	A	A
CASE	14	S	A		A	A
CASE	15	A	N	N	A	A
CASE	16	A	N	S	A	S
CASE	17		N	S	A	A
CASE	18	S	N	N	A	A
CASE	19	A	N	A	A	A
CASE	20		A	A	A	A
CASE	21	S	N	A	A	A
CASE	22			A	A	A
CASE	23	S	N	S	A	S
CASE	24		N	A	A	A
CASE	25		N	S	A	A
CASE	26	N	N	N	A	A
CASE	27		N	A	A	A
CASE	28		N	A	A	A
CASE	29		N	N	A	A
CASE	30	A	N	A	A	A
CASE	31		N	A	A	A
CASE	32	N	N	N	A	S
CASE	33		N	A	A	A
CASE	34	A	N	N	A	A
CASE	35		N	N	A	A
CASE	36	A	N	A	A	A
CASE	37	A	N	N	A	S
CASE	38	S	N	N	A	A
CASE	39	A		A	A	A
CASE	40	S	N	N	A	A
CASE	41	A	N	N	A	A
CASE	42	A	N	N	A	A
CASE	43	A	N	N	A	S
CASE	44	A	N	N	A	A
CASE	45	A	N	A	A	A
CASE	46	A	N	A	A	A

		QUES11	QUES12	QUES13	QUES14	QUES15
CASE	47		N	A	A	A
CASE	48	A	N	A	A	A
CASE	49	A	N	N	A	A
CASE	50	A	N	N	A	A
CASE	51	A	N	N	A	A
CASE	52	S	N	A	A	A
CASE	53	A	N	N	A	N
CASE	54	A	N	N	A	S
CASE	55					
CASE	56	N	N	N	A	A
CASE	57	A		A	A	A
CASE	58	A	N	A	A	A
CASE	59	A	N	N	A	A
CASE	60	A	N	N	A	S
CASE	61		N	N	A	A
CASE	62					
CASE	63	A	N	A	A	A
CASE	64					
CASE	65	A	N	A	A	S
CASE	66	A	N	N	A	S
CASE	67	A	N	A	A	A
CASE	68	A	N	N	A	A
CASE	69					
CASE	70	A	N	A	A	A
CASE	71	A	N	S	A	A
CASE	72					
CASE	73	A	N	A	A	A
CASE	74	N	N	N	A	A
CASE	75	N	N	A	A	A
CASE	76	A		A	A	A
CASE	77		A	A	A	A
CASE	78	A	A		A	A
CASE	79		N	N	A	A
CASE	80		N	N	S	S
CASE	81	S	A		A	A
CASE	82	N	N	N	A	A
CASE	83		N	S	A	A
CASE	84		A	A	A	A
CASE	85		N	N	A	A
CASE	86	A	A		A	A
CASE	87	S	A	A	A	A
CASE	88		A		A	A
CASE	89		A	A	A	A
CASE	90	A	A		A	A
CASE	91		N	N	A	A
CASE	92		N	A	A	A

	QUES11	QUES12	QUES13	QUES14	QUES15
CASE 93		A	A	A	A
CASE 94		A	S	A	S
CASE 95	N	A	S	A	A
CASE 96		A	A	A	A
CASE 97		N	N	A	A
CASE 98		N	A	A	A
CASE 99		N	N	A	A
CASE 100		N	N	A	A
CASE 101	S	A		A	A
CASE 102			A	A	A
CASE 103	N	N		A	A
CASE 104	N	N	N	A	A
CASE 105		N	A	A	A
CASE 106		N	N	A	A
CASE 107		N	N	A	A
CASE 108		A		A	A
CASE 109		N	N	A	A
CASE 110					
CASE 111		N	N	A	A
CASE 112		N	A	A	A
CASE 113		A	N	A	A
CASE 114	N	N	A	A	A
CASE 115	A	N	A	A	N
CASE 116		N	A	A	A
CASE 117		N	N	A	A
CASE 118		N	A	A	S
CASE 119					
CASE 120		N	N	A	A
CASE 121		N	N	A	A
CASE 122					
CASE 123					
CASE 124		N	N	A	A
CASE 125		N	A	A	A
CASE 126		N	N	A	A
CASE 127			A	A	N
CASE 128					
CASE 129					
CASE 130					
CASE 131	N	N	A	A	A
CASE 132					
CASE 133		N	N	A	A
CASE 134	A	N	A	A	A
CASE 135					
CASE 136					
CASE 137					
CASE 138		N	A	A	S

	QUES11	QUES12	QUES13	QUES14	QUES15
CASE 139		N	A	A	A
CASE 140					
CASE 141	S	N	N	A	A
CASE 142					
CASE 143					
CASE 144		N	N	A	A
CASE 145					
CASE 146					
CASE 147					
CASE 148					
CASE 149					
CASE 150	N	N	A	A	N
CASE 151	A	N	A	A	A

		QUES16	QUES17	QUES18	QUES19	QUES20
CASE	1	A	N	A	A	S
CASE	2	A	A		A	A
CASE	3	A	A		A	A
CASE	4	A	A		A	N
CASE	5	S	S		A	A
CASE	6	A	S	A	A	A
CASE	7	A	A		A	A
CASE	8	S	S		A	A
CASE	9	N	S	A	A	A
CASE	10	N	S	A	A	A
CASE	11	A	A		A	A
CASE	12	N	N		A	A
CASE	13	A	A		A	N
CASE	14	S	S		A	A
CASE	15	S	S		A	A
CASE	16	S	S	N	A	A
CASE	17	A	A	A	A	A
CASE	18	A	A		A	S
CASE	19	N	N	S	S	A
CASE	20	S	S	N	A	A
CASE	21			N	A	A
CASE	22			A	A	A
CASE	23	N	N	N	A	A
CASE	24	A	S	S	A	A
CASE	25	A	A	N	A	A
CASE	26	N	N		A	S
CASE	27			A	A	A
CASE	28	A	A	A	A	A
CASE	29	N	N	N	A	A
CASE	30	A	A	A	A	A
CASE	31	A	A	A	A	A
CASE	32	N	N		A	S
CASE	33	A	A	A	A	A
CASE	34	A	A		A	A
CASE	35	A	A		A	N
CASE	36	S	A	N	A	A
CASE	37	S	S		A	A
CASE	38	A	A		A	A
CASE	39			S	A	A
CASE	40	A	A	A	N	
CASE	41	A	A		A	A
CASE	42	S	S		A	A
CASE	43	N	N		A	A
CASE	44	A	A		A	A
CASE	45	A	A	A	A	S
CASE	46	A	A	A	A	A

	QUES16	QUES17	QUES18	QUES19	QUES20
CASE 47	A	A	A	A	A
CASE 48	A	A	A	A	A
CASE 49	A	A		A	A
CASE 50	A	A		A	A
CASE 51	S	S		A	A
CASE 52	A	A	A	A	A
CASE 53	A	N		A	S
CASE 54	A	A		A	A
CASE 55					
CASE 56	S	S		A	A
CASE 57			A	A	A
CASE 58	A	A	A	A	A
CASE 59	A	A		A	A
CASE 60	A	S		A	A
CASE 61	A	A		A	A
CASE 62					
CASE 63	A	A	N	A	A
CASE 64					
CASE 65	N	N	N	A	A
CASE 66	S	A	N	S	N
CASE 67	A	A	A	A	A
CASE 68	A	A		A	A
CASE 69					
CASE 70	A	A	A	A	N
CASE 71	S	A	A	A	A
CASE 72					
CASE 73	A	A	S	A	A
CASE 74	A	A		A	A
CASE 75	A	A	S	A	A
CASE 76	A		N	A	A
CASE 77	A	A		A	N
CASE 78	A	A		A	A
CASE 79	N	S		A	A
CASE 80	S	S		A	N
CASE 81	A	A		A	A
CASE 82	A	A		A	A
CASE 83	N	S	A	A	A
CASE 84	A	S	S	A	A
CASE 85	N	S		A	N
CASE 86	N	S		A	A
CASE 87	A	A	N	A	A
CASE 88	S	S		A	A
CASE 89	A	A	A	A	A
CASE 90	S	S		A	A
CASE 91	A	A		A	S
CASE 92	A	A	N	A	S

	QUES16	QUES17	QUES18	QUES19	QUES20
CASE 93	A	A	A	A	S
CASE 94	S	S	A	A	A
CASE 95	A	A	A	A	A
CASE 96	A	A	A	A	A
CASE 97	N	N		A	N
CASE 98	A	A	A	A	A
CASE 99	S	S		A	S
CASE 100	A	A		A	N
CASE 101	A	A		A	A
CASE 102	A		N	A	A
CASE 103	A	A		A	N
CASE 104	A	A		A	A
CASE 105	N	N	A	A	A
CASE 106	A	A		A	A
CASE 107	N	S		A	A
CASE 108	A	A		A	A
CASE 109	N	S		A	A
CASE 110					
CASE 111	A	A		A	S
CASE 112	A	A	A	A	A
CASE 113	A	A	A	A	A
CASE 114	A	A	S	A	A
CASE 115	A	N	N	A	A
CASE 116	A	S	S	A	S
CASE 117	A	A		A	A
CASE 118	S	S	S	A	A
CASE 119					
CASE 120	A	A		A	S
CASE 121	A	A		A	S
CASE 122					
CASE 123					
CASE 124	A	A		A	A
CASE 125	A	A	S	A	S
CASE 126	A	A		A	A
CASE 127			S	A	A
CASE 128					
CASE 129					
CASE 130					
CASE 131	A	A	A	A	S
CASE 132					
CASE 133	A	A		A	A
CASE 134	A	A	A	A	A
CASE 135					
CASE 136					
CASE 137					
CASE 138	A	A	S	A	A

	QUES16	QUES17	QUES18	QUES19	QUES20
CASE 139			A	A	N
CASE 140					
CASE 141	A	A		A	S
CASE 142					
CASE 143					
CASE 144	A	A		A	A
CASE 145					
CASE 146					
CASE 147					
CASE 148					
CASE 149					
CASE 150	S	A	A	S	N
CASE 151	A	A	N	A	A

		QUES21	QUES22	QUES23	QUES24	QUES25
CASE	1	N	A	S	N	N
CASE	2	N	A	N	N	N
CASE	3	N	A	A	N	N
CASE	4	N	A	A	N	S
CASE	5	N	A	A	N	N
CASE	6	N	A	A	N	S
CASE	7	N	A	A	N	S
CASE	8	N	A	A	N	S
CASE	9	N	A	A	N	S
CASE	10	N	A	A	N	S
CASE	11	N	A	A	N	A
CASE	12	N	A	A	N	N
CASE	13	N	A	A	N	S
CASE	14	N	A	A	N	N
CASE	15	N	A	S	N	N
CASE	16	N	A	S	N	N
CASE	17	N	A	A	N	S
CASE	18	N	A	S	N	S
CASE	19	N	S	S	N	N
CASE	20	N	A	A	N	N
CASE	21	N	A	S	N	N
CASE	22	N	A	A	N	N
CASE	23	N	A	S	N	N
CASE	24	N	A	S	N	N
CASE	25	N	N	S	N	S
CASE	26	N	A	A	N	S
CASE	27	S	A	A	N	A
CASE	28	N	A	A	N	N
CASE	29	N	A	A	N	N
CASE	30	N	A	A	N	S
CASE	31	S	A	N	N	N
CASE	32	N	A	A	N	N
CASE	33	N	A	A	S	S
CASE	34	N	A	N	N	N
CASE	35	N	A	N	N	N
CASE	36	N	A	A	N	N
CASE	37	N	S	A	N	S
CASE	38	N	A	S	N	N
CASE	39	N	S	N	N	N
CASE	40		A	S	N	N
CASE	41	N	A	S	N	S
CASE	42	N	A	A	N	N
CASE	43	N	A	S	N	N
CASE	44	N	A	S	N	N
CASE	45	N	A	N	N	N
CASE	46	N	A	A	N	S

	QUES21	QUES22	QUES23	QUES24	QUES25
CASE 47	N	A	A	N	N
CASE 48	N	A	S	N	N
CASE 49	N	A	S	N	N
CASE 50	N	A	A	N	N
CASE 51	N	A	S	N	N
CASE 52	N	A	A	N	N
CASE 53	N	A	N	N	N
CASE 54	N	A	N	N	N
CASE 55					
CASE 56	N	A	S	N	N
CASE 57	N	A	A	N	N
CASE 58	N	A	A	N	N
CASE 59	N	A	A	N	N
CASE 60	N	A	A	N	N
CASE 61	N	A	A	N	N
CASE 62					
CASE 63	N	A	A	N	S
CASE 64					
CASE 65	N	A	A	N	N
CASE 66	N	A	A	N	S
CASE 67	N	A	A	N	S
CASE 68	N	A	A	N	S
CASE 69					
CASE 70	N	A	S	S	S
CASE 71	S	A	A	N	S
CASE 72					
CASE 73	S	A	A	S	S
CASE 74	N	A	A	N	S
CASE 75	N	A	A	N	S
CASE 76	N	A	A	N	N
CASE 77	N	A	A	N	S
CASE 78	N	A	A	N	N
CASE 79	N	A	A	N	S
CASE 80	N	A	S	N	N
CASE 81	N	A	A	N	N
CASE 82	N	A	N	N	N
CASE 83	N	A	A	N	S
CASE 84	N	A	A	N	S
CASE 85	N	A	N	N	N
CASE 86	N	A	A	N	N
CASE 87	N	A	A	N	N
CASE 88	N	A	A	N	N
CASE 89	N	A	A	N	N
CASE 90	N	A	A	N	N
CASE 91	N	A	S	N	S
CASE 92	N	A	N	N	N

	QUES21	QUES22	QUES23	QUES24	QUES25
CASE 93	N	A	A	N	S
CASE 94	N	A	A	N	S
CASE 95	N	A	A	N	N
CASE 96	S	A	A	N	A
CASE 97	N	A	N	N	N
CASE 98	N	A	A	N	N
CASE 99	N	A	A	N	N
CASE 100	N	A	A	N	N
CASE 101	N	A	A	N	N
CASE 102	N	A	A	N	S
CASE 103	N	A	N	N	N
CASE 104	A	A	S	N	N
CASE 105	N	A	S	N	N
CASE 106	N	A	S	N	N
CASE 107	N	A	N	N	N
CASE 108	N	A	A	N	N
CASE 109	N	A	S	N	N
CASE 110					
CASE 111	N	A	S	N	S
CASE 112	N	A	A	N	S
CASE 113	N	A	A	N	N
CASE 114	N	A	S	N	N
CASE 115	N	A	A	N	N
CASE 116	N	A	S	N	S
CASE 117	N	A	N	N	N
CASE 118	N	A	A	N	N
CASE 119					
CASE 120	N	A	N	N	N
CASE 121	N	A	A	N	S
CASE 122					
CASE 123					
CASE 124	N	A	A	N	S
CASE 125	N	A	S	N	N
CASE 126	N	A	A	N	N
CASE 127	N	A	A	N	S
CASE 128					
CASE 129					
CASE 130					
CASE 131	N	A	S	N	N
CASE 132					
CASE 133	N	A	A	N	S
CASE 134	N	A	A	N	N
CASE 135					
CASE 136					
CASE 137					
CASE 138	N	A	S	N	S

	QUES21	QUES22	QUES23	QUES24	QUES25
CASE 139	N	A	N	N	N
CASE 140					
CASE 141	N	A	A	N	N
CASE 142					
CASE 143					
CASE 144	N	A	N	N	N
CASE 145					
CASE 146					
CASE 147					
CASE 148					
CASE 149					
CASE 150	A	S	N	N	N
CASE 151	N	A	A	N	N

		QUES26	QUES27	QUES28	QUES29	QUES30
CASE	1	S	N	N	N	A
CASE	2	N	N	N	N	A
CASE	3	N	N	N	N	A
CASE	4	A	N	N	N	A
CASE	5	S	A	N	A	A
CASE	6	A	N	N	A	A
CASE	7	S	S	N	S	A
CASE	8	N	N	N	S	S
CASE	9	N	N	N	N	A
CASE	10	N	N	N	N	A
CASE	11	A	A	N	N	A
CASE	12	A	N	N	N	S
CASE	13	A	N	N		A
CASE	14	N	N	S	N	S
CASE	15	A	N	N	N	A
CASE	16	A	N	N	N	A
CASE	17	S	S	N	S	A
CASE	18	A	S	N	S	A
CASE	19	A	N	N		A
CASE	20	S	S	N		S
CASE	21	A	S	N	N	S
CASE	22	S	N	N	N	S
CASE	23	S	N	N	S	A
CASE	24	N	N	N	S	A
CASE	25	S		S	S	A
CASE	26	N	N	N	N	S
CASE	27	A	N	N	N	N
CASE	28	A	N	N		A
CASE	29	A	N	N	N	A
CASE	30	N	S	N	N	A
CASE	31	S	N	N	N	A
CASE	32	A	N	N	N	N
CASE	33	S	A	N	S	A
CASE	34	S	N	N	N	A
CASE	35	N	N	N	N	A
CASE	36	A	N	N	N	A
CASE	37	A	N	N		S
CASE	38	N	N	N	N	S
CASE	39	N	N	N	N	N
CASE	40	N	N	N	N	A
CASE	41	N	N	N	N	N
CASE	42	N	N	N		A
CASE	43	S	S	N	N	S
CASE	44	N	N	N	N	A
CASE	45	N	N	N	N	S
CASE	46	N	N	N	S	S

	QUES26	QUES27	QUES28	QUES29	QUES30
CASE 47	A	N	N	N	N
CASE 48	N	N	N	N	S
CASE 49	N	N	N	N	N
CASE 50	A	A	N	N	A
CASE 51	N	N	N	N	S
CASE 52	N	N	N		S
CASE 53	N	N	N	N	A
CASE 54	N	S	N	N	N
CASE 55					S
CASE 56	N	N	N	N	A
CASE 57	N	N	N	N	A
CASE 58	N	N	N	N	S
CASE 59	N	N	N	N	N
CASE 60	N	N	N	A	A
CASE 61	S	S	N	A	A
CASE 62					S
CASE 63	N	N	N	N	A
CASE 64					N
CASE 65	N	N	N	N	S
CASE 66	N	N	N	N	A
CASE 67	A	S	N	N	S
CASE 68	N	N	N		S
CASE 69					S
CASE 70	N	N	S	N	N
CASE 71	A	N	N	N	S
CASE 72					N
CASE 73	N	N	N	A	N
CASE 74	A	A	N	N	A
CASE 75	S	N	S	N	A
CASE 76	N	N	N	N	S
CASE 77	N	N	N	N	A
CASE 78	S	N	S		S
CASE 79	N	N	N	N	A
CASE 80	S	N	N	N	A
CASE 81	A	N	S	N	S
CASE 82	A	A	N	N	A
CASE 83	S	N	N	N	S
CASE 84	A	N	N	S	N
CASE 85	S	S	N	N	A
CASE 86	A	A	S	N	A
CASE 87	A	N	A	S	A
CASE 88	A	S	A	N	A
CASE 89	A	A	A		A
CASE 90	S	N	A	N	N
CASE 91	A	N	N	N	S
CASE 92	A	N	N	S	A

	QUES26	QUES27	QUES28	QUES29	QUES30
CASE 93	N	N	N	S	N
CASE 94	N	N	N	N	S
CASE 95	A	N	N	N	S
CASE 96	S	A	N	N	S
CASE 97	A	A	N	N	A
CASE 98	N	N	N		S
CASE 99	S	N	N	A	A
CASE 100	A	N	N	N	A
CASE 101	A	N	S	S	A
CASE 102	S	A	A	N	A
CASE 103	A	A	N	N	A
CASE 104	S	S	N	S	A
CASE 105	S	N	N	S	A
CASE 106	A	N	N	N	A
CASE 107	S	N	N	N	A
CASE 108	A	N	A	N	A
CASE 109	S	N	N	N	A
CASE 110					
CASE 111	S	N	N		A
CASE 112	S	N	N	N	N
CASE 113	S	A	S	N	A
CASE 114	N	N	N	N	S
CASE 115	N	N	N	N	S
CASE 116	N	N	N	N	S
CASE 117	N	S	N	N	S
CASE 118	N	S	N	N	S
CASE 119				N	N
CASE 120	N	N	N	N	N
CASE 121	A	N	N		A
CASE 122					N
CASE 123					A
CASE 124	N	N	N	N	N
CASE 125	S	N	S	N	N
CASE 126	N	N	N	N	N
CASE 127	S	N	N	N	N
CASE 128					S
CASE 129					N
CASE 130				N	N
CASE 131	N	N	S	S	N
CASE 132					N
CASE 133	N	N	N	N	A
CASE 134	N	N	N	N	S
CASE 135					A
CASE 136					N
CASE 137					S
CASE 138	N	N	S	N	S

	QUES26	QUES27	QUES28	QUES29	QUES30
CASE 139	N	N	N	N	S
CASE 140					N
CASE 141	N	N	N	N	A
CASE 142					N
CASE 143					N
CASE 144	N	N	N	N	A
CASE 145					N
CASE 146					S
CASE 147					N
CASE 148					N
CASE 149					N
CASE 150	N	N	N	S	N
CASE 151	N	N	N	N	S

	QUES31	QUES32	QUES33	QUES34	QUES35
CASE 1	N	N	N	S	N
CASE 2	A	A	S	S	S
CASE 3	A	A	N	S	N
CASE 4	A	A	N	S	N
CASE 5	A	A	N	S	N
CASE 6	A	A	S	S	S
CASE 7	A	A	S	S	S
CASE 8	A	A	N	S	N
CASE 9	A	A	S	S	S
CASE 10	A	A	S	S	S
CASE 11	A	A	N	S	N
CASE 12	S	S	N	S	N
CASE 13	A	A	N	S	N
CASE 14	S	S	N	N	N
CASE 15	A	A	N	N	N
CASE 16	A	A	S	S	N
CASE 17	A	A	N	S	N
CASE 18	A	A	N	N	N
CASE 19	A	A	N	N	N
CASE 20	N	N	N	S	N
CASE 21	A	A	N	S	N
CASE 22	S	S	S	N	N
CASE 23	A	A	N	S	N
CASE 24	A	A	S	N	N
CASE 25	N	N	N	N	N
CASE 26	N	N	N	S	N
CASE 27	N	A	N	N	N
CASE 28	A	A	S	S	S
CASE 29	A	A	S	S	N
CASE 30	N	N	N	N	N
CASE 31	A	A	N	S	N
CASE 32	N	A	N	N	N
CASE 33	N	N	N	N	N
CASE 34	A	A	N	N	N
CASE 35	A	A	A	N	S
CASE 36	A	A	S	N	N
CASE 37	S	S	N	N	N
CASE 38	N	N	N	N	N
CASE 39	N	N	N	N	N
CASE 40	N	N	N	N	N
CASE 41	N	N	N	N	N
CASE 42	N	N	N	N	N
CASE 43	N	N	N	S	N
CASE 44	N	N	N	N	N
CASE 45	N	N	N	N	N
CASE 46	N	N	N	N	N

	QUES31	QUES32	QUES33	QUES34	QUES35
CASE 47	N	N	N	N	N
CASE 48	N	N	N	N	N
CASE 49	N	N	N	N	N
CASE 50	N	N	N	N	N
CASE 51	N	N	N	N	N
CASE 52	N	N	N	N	N
CASE 53	N	N	N	N	N
CASE 54	N	N	N	N	N
CASE 55	N	N	N	N	N
CASE 56	N	N	N	N	N
CASE 57	N	N	N	N	N
CASE 58	N	N	N	N	N
CASE 59	N	N	N	N	N
CASE 60	N	N	N	N	N
CASE 61	N	N	N	S	N
CASE 62	N	N	N	N	N
CASE 63	N	N	N	N	N
CASE 64	N	N	N	N	N
CASE 65	N	N	N	N	N
CASE 66	N	N	N	S	N
CASE 67	N	N	N	S	N
CASE 68	N	N	N	N	N
CASE 69	N	N	N	N	N
CASE 70	N	N	N	S	N
CASE 71	N	N	N	N	S
CASE 72	N	N	N	N	N
CASE 73	N	N	N	N	N
CASE 74	A	A	S	S	S
CASE 75	A	A	N	S	S
CASE 76	N	N	N	N	N
CASE 77	A	A	S	S	S
CASE 78	A	A	S	N	S
CASE 79	A	A	N	S	N
CASE 80	S	A	N	S	S
CASE 81	A	A	S	N	S
CASE 82	A	A	S	N	A
CASE 83	N	N	S	N	S
CASE 84	N	N	S	N	S
CASE 85	A	A	A	S	S
CASE 86	A	A	S	N	S
CASE 87	A	A	S	S	S
CASE 88	A	A	S	S	S
CASE 89	A	A	S	S	N
CASE 90	A	A	N	N	N
CASE 91	A	A	N	N	N
CASE 92	A	A	N	N	N

	QUES31	QUES32	QUES33	QUES34	QUES35
CASE 93	S	S	S	N	N
CASE 94	N	N	N	N	N
CASE 95	A	A	A	N	S
CASE 96	A	A	S	S	S
CASE 97	A	A	N	N	N
CASE 98	S	S	S	N	N
CASE 99	S	S	S	S	S
CASE 100	A	A	N	N	N
CASE 101	A	A	N	S	N
CASE 102	A	A	N	S	N
CASE 103	A	A	N	S	N
CASE 104	A	A	S	S	S
CASE 105	A	A	N	N	N
CASE 106	A	A	S	N	S
CASE 107	A	A	N	N	N
CASE 108	A	A	S	S	S
CASE 109	A	A	N	N	N
CASE 110	N	S	N	N	N
CASE 111	A	A	S	N	S
CASE 112	N	N	N	N	N
CASE 113	A	A	N	S	S
CASE 114	N	N	N	N	N
CASE 115	N	N	N	N	N
CASE 116	N	N	N	N	N
CASE 117	N	N	N	N	N
CASE 118	N	N	N	N	N
CASE 119	N	N	N	N	N
CASE 120	N	N	N	N	N
CASE 121	N	N	N	S	N
CASE 122	N	N	N	N	N
CASE 123	N	N	N	N	N
CASE 124	N	N	N	N	N
CASE 125	N	N	N	N	N
CASE 126	N	N	N	N	N
CASE 127	N	N	N	N	N
CASE 128	N	N	N	N	N
CASE 129	N	N	N	N	N
CASE 130	N	N	N	N	N
CASE 131	N	N	N	N	N
CASE 132	N	N	N	N	N
CASE 133	N	N	N	N	N
CASE 134	N	N	S	S	N
CASE 135	N	N	N	N	N
CASE 136	N	N	N	N	N
CASE 137	N	N	N	N	N
CASE 138	N	N	N	N	N

	QUES31	QUES32	QUES33	QUES34	QUES35
CASE 139	N	N	N	N	N
CASE 140	N	N	N	N	N
CASE 141	N	N	N	N	S
CASE 142	N	N	N	N	N
CASE 143	N	N	N	N	N
CASE 144	N	N	N	S	S
CASE 145	N	N	N	N	N
CASE 146	N	N	N	N	N
CASE 147	N	N	N	N	N
CASE 148	N	N	N	N	N
CASE 149	N	N	N	N	N
CASE 150	N	S	S	S	N
CASE 151	N	N	N	N	N

		QUES36	QUES37	QUES38	QUES39	QUES40
CASE	1	N	S	N	N	N
CASE	2	S	S	N	N	N
CASE	3	S	S	N	S	N
CASE	4	S	S	N	N	S
CASE	5	S		N	S	N
CASE	6	S	N	N	N	N
CASE	7	S		N	S	N
CASE	8	S	N	N	N	N
CASE	9	N	N	N	N	N
CASE	10	N	N	N	N	S
CASE	11	S	S	N	N	N
CASE	12	N	S	N	N	N
CASE	13	N		N	S	N
CASE	14	N	N	N	N	N
CASE	15	N	N	N	N	N
CASE	16	S	N	N	N	S
CASE	17	S	N	N	N	N
CASE	18	S		N	S	N
CASE	19	S	N	N	S	N
CASE	20	N		N	N	N
CASE	21	S	S	N	S	N
CASE	22	N	N	N	N	S
CASE	23	S	N	N	N	S
CASE	24	S			N	S
CASE	25	S	N		A	S
CASE	26	N	N	N	N	S
CASE	27	N	N	N	N	N
CASE	28	S		N	N	N
CASE	29	S		N	N	N
CASE	30	N	N	N	N	N
CASE	31	N	N	N	N	N
CASE	32	N	N	N	N	N
CASE	33	S	N	N	N	S
CASE	34	N		N	N	N
CASE	35	S	N	N	N	N
CASE	36	S	N	N	S	S
CASE	37	N		N	N	N
CASE	38	N	N	N	N	N
CASE	39	N	N	N	N	N
CASE	40	N	N	N	N	N
CASE	41	N	N	N	N	N
CASE	42	N	S	N	N	N
CASE	43	S	N	N	N	N
CASE	44	S	N	N	N	N
CASE	45	N	N	N	N	N
CASE	46	N	N	N	N	N

	QUES36	QUES37	QUES38	QUES39	QUES40
CASE 47	S	N	N	N	N
CASE 48	N	N	N	N	N
CASE 49	N	N	N	N	N
CASE 50	N	N	N	N	N
CASE 51	N	N	N	N	N
CASE 52	N	N	N	N	N
CASE 53	N	N	N	N	N
CASE 54	N	N	N	N	N
CASE 55	N	N	N	N	N
CASE 56	N	N	N	N	N
CASE 57	N	N	N	N	N
CASE 58	N	N	N	N	N
CASE 59	N	N	N	N	N
CASE 60	N	N	N	N	N
CASE 61	N	N	N	N	N
CASE 62	N	N	N	N	N
CASE 63	N	S	N	N	N
CASE 64	N	N	N	N	N
CASE 65	N	S	N	S	N
CASE 66	S		N	N	N
CASE 67	N	S	N	N	N
CASE 68	N		N	N	N
CASE 69	N	N	N	N	N
CASE 70	N	N	N	N	N
CASE 71	N	N	N	N	N
CASE 72	N	N	N	N	N
CASE 73	N	N	N	N	N
CASE 74	N	N	N	N	N
CASE 75	N	N	N	N	N
CASE 76	N	N	N	N	S
CASE 77	N	N	N	N	N
CASE 78	N		N	N	N
CASE 79	N	N	N	N	N
CASE 80	N		N	N	N
CASE 81	N	N	N	N	S
CASE 82	N	N	N	N	N
CASE 83	N	N	N	N	N
CASE 84	N		N	N	N
CASE 85	N		N	N	S
CASE 86	N	N	N	N	N
CASE 87	N	N	N	N	N
CASE 88	N	N	N	N	S
CASE 89	S	N	N	S	N
CASE 90	N	N	N	S	S
CASE 91	N	N	N	N	N
CASE 92	N		N	N	N

	QUES36	QUES37	QUES38	QUES39	QUES40
CASE 93	N		N	N	N
CASE 94	N		N	N	N
CASE 95	N		N	N	N
CASE 96	S	S		N	S
CASE 97	N	N	N	N	N
CASE 98	N	N	N	N	N
CASE 99	S		N	N	S
CASE 100	N	N	N	N	N
CASE 101	N	N	N	N	N
CASE 102	N	S	N	S	N
CASE 103	N	N	N	N	N
CASE 104	N	N	N	N	N
CASE 105	N		N	N	N
CASE 106	N	N	N	N	N
CASE 107	S	N	N	N	S
CASE 108	N	N	N	N	N
CASE 109	N	N	N	N	N
CASE 110	N	N	N	N	N
CASE 111	N		N	N	N
CASE 112	N	N	N	N	N
CASE 113	N	N	N	S	N
CASE 114	N	N	N	N	S
CASE 115	N	N	N	N	N
CASE 116	N	N	N	N	N
CASE 117	N	N	N	N	N
CASE 118	N	N	N	N	N
CASE 119	N	N	N	N	N
CASE 120	S	N	N	N	N
CASE 121	N	N	N	N	N
CASE 122	N	N	N	N	N
CASE 123	N	N	N	N	N
CASE 124	N	N	N	N	N
CASE 125	N	N	N	N	N
CASE 126	N	N	N	N	N
CASE 127	N	N	N	N	N
CASE 128	N	N	N	N	N
CASE 129	N	N	N	N	N
CASE 130	N	N	N	N	N
CASE 131	N	N	N	N	N
CASE 132	N	N	N	N	N
CASE 133	N	N	N	N	N
CASE 134	S		N	N	N
CASE 135	N	N	N	N	N
CASE 136	N	N	N	N	N
CASE 137	N	N	N	N	N
CASE 138	N	N	N	N	N

	QUES36	QUES37	QUES38	QUES39	QUES40
CASE 139	N	N	N	N	S
CASE 140	S	N	N	N	N
CASE 141	N	N	N	N	S
CASE 142	N	N	N	N	N
CASE 143	N	N	N	N	N
CASE 144	N	N	N	N	N
CASE 145	N	N	N	N	N
CASE 146	N	N	N	N	N
CASE 147	N	N	N	N	N
CASE 148	N	N	N	N	S
CASE 149	N	N	N	N	N
CASE 150	N		N	N	N
CASE 151	N	N	N	S	S

APPENDIX G

Correlation Matrix

Q = Question

	Q1	Q2	Q3	Q4	Q5
Q1	1.000				
Q2	0.030	1.000			
Q3	0.063	0.251	1.000		
Q4	0.148	0.069	0.063	1.000	
Q5	0.078	0.078	0.462	0.370	1.000
Q6	-0.007	0.079	0.125	0.141	0.153
Q7	0.101	0.178	-0.080	-0.113	-0.124
Q8	-0.201	0.048	0.051	0.131	0.289
Q9	-0.020	0.001	0.225	0.165	0.105
Q10	0.076	-0.074	0.017	-0.102	0.163
Q11	0.462	0.029	-0.223	0.194	0.037
Q12	-0.318	0.052	-0.028	0.027	0.055
Q13	-0.032	0.079	-0.024	0.054	0.181
Q14	-0.037	0.047	0.058	0.006	.
Q15	0.103	-0.166	0.047	-0.113	-0.034
Q16	-0.115	0.005	-0.091	0.217	0.111
Q17	0.033	-0.213	-0.117	0.119	-0.030
Q18	-0.032	0.030	0.089	0.239	0.006
Q19	-0.071	0.091	-0.044	0.012	0.039
Q20	0.077	0.066	-0.038	0.001	0.055
Q21	-0.007	-0.028	0.083	0.057	0.108
Q22	-0.080	0.043	0.028	0.013	-0.092
Q23	0.019	0.195	0.141	-0.008	0.112
Q24	0.065	0.013	0.056	-0.011	0.092
Q25	-0.042	0.075	0.277	-0.001	0.202
Q26	-0.095	-0.062	0.307	0.063	0.266
Q27	-0.112	-0.169	0.021	-0.032	0.122
Q28	-0.099	0.042	-0.046	-0.113	-0.122
Q29	0.023	-0.080	-0.037	-0.153	0.059
Q30	-0.083	-0.167	0.172	-0.055	0.217
Q31	-0.112	-0.261	0.208	-0.033	0.267
Q32	-0.117	-0.230	0.222	-0.037	0.302
Q33	-0.019	-0.052	0.078	-0.018	0.230
Q34	-0.097	-0.028	0.282	-0.074	0.222
Q35	-0.183	-0.026	0.040	-0.051	0.108
Q36	0.126	-0.143	0.107	0.030	0.435
Q37	-0.000	-0.009	0.216	0.115	0.345

Q38	.	.	.	.	.
Q39	0.020	-0.175	0.081	-0.035	0.115
Q40	0.109	-0.001	-0.023	-0.195	0.127

	Q6	Q7	Q8	Q9	Q10
Q6	1.000				
Q7	0.089	1.000			
Q8	0.174	0.093	1.000		
Q9	0.152	0.114	0.015	1.000	
Q10	0.205	0.075	0.199	-0.059	1.000
Q11	0.147	0.014	-0.095	0.066	0.212
Q12	0.044	-0.111	0.250	-0.043	0.040
Q13	0.074	0.027	0.295	-0.185	-0.101
Q14	0.159	0.092	.	.	-0.008
Q15	-0.011	-0.192	-0.152	0.101	-0.035
Q16	-0.050	0.027	0.190	0.095	-0.058
Q17	-0.122	-0.058	0.069	-0.116	-0.063
Q18	-0.247	-0.173	-0.074	-0.279	0.047
Q19	-0.012	-0.169	-0.104	0.114	-0.015
Q20	0.044	0.139	-0.202	0.123	-0.046
Q21	-0.054	0.049	0.027	-0.253	0.020
Q22	0.046	-0.062	-0.004	0.315	-0.017
Q23	0.129	0.001	-0.039	0.211	-0.065
Q24	0.083	0.050	-0.155	0.070	0.014
Q25	0.102	-0.252	-0.116	0.070	-0.106
Q26	0.188	-0.174	0.020	0.186	-0.016
Q27	0.059	-0.147	0.054	-0.051	0.045
Q28	0.159	-0.022	0.238	0.036	-0.145
Q29	0.038	-0.060	0.067	-0.045	0.075
Q30	0.235	-0.038	0.191	0.160	0.406
Q31	0.221	-0.196	0.225	0.071	0.346
Q32	0.213	-0.201	0.232	0.022	0.346
Q33	0.055	-0.158	0.274	-0.183	0.233
Q34	0.112	-0.131	0.227	-0.036	0.283
Q35	0.031	-0.180	0.223	0.018	0.200
Q36	0.061	-0.154	0.141	-0.008	0.185
Q37	0.094	0.016	0.070	0.122	0.168
Q38	.	.	.	.	.
Q39	0.187	-0.034	0.099	0.125	0.143
Q40	0.051	-0.047	0.061	0.065	0.137

	Q11	Q12	Q13	Q14	Q15
Q11	1.000				
Q12	-0.049	1.000			
Q13	0.146	0.246	1.000		
Q14	.	0.040	0.094	1.000	
Q15	-0.003	0.124	-0.033	0.150	1.000
Q16	0.075	0.070	0.180	0.066	0.163
Q17	0.031	0.053	0.069	0.072	0.442
Q18	-0.161	0.069	0.053	.	0.190
Q19	0.054	0.077	0.031	-0.015	0.145
Q20	0.247	0.136	0.137	0.226	0.120
Q21	-0.215	-0.033	0.118	0.020	-0.120
Q22	-0.036	0.077	-0.077	-0.017	0.124
Q23	0.103	0.270	0.144	0.055	0.088
Q24	0.134	-0.070	0.176	0.014	0.061
Q25	0.037	-0.032	0.060	0.062	0.058
Q26	-0.219	0.190	-0.073	-0.016	0.138
Q27	-0.177	0.129	-0.085	0.045	0.121
Q28	-0.066	0.586	0.242	0.034	0.116
Q29	-0.141	0.019	0.095	0.045	0.002
Q30	-0.066	-0.033	-0.257	-0.075	0.128
Q31	-0.311	0.291	-0.148	-0.007	0.242
Q32	-0.393	0.268	-0.145	-0.094	0.176
Q33	-0.259	0.378	0.056	0.053	0.135
Q34	-0.385	0.136	-0.067	-0.114	-0.031
Q35	-0.337	0.362	-0.126	-0.147	0.183
Q36	0.089	-0.078	-0.042	0.051	0.033
Q37	0.025	0.029	0.071	.	-0.044
Q38	.	.	.	.	.
Q39	0.140	0.037	0.064	0.032	0.093
Q40	-0.044	0.047	0.089	0.041	0.093

	Q16	Q17	Q18	Q19	Q20
Q16	1.000				
Q17	0.763	1.000			
Q18	0.174	0.296	1.000		
Q19	0.079	-0.017	-0.025	1.000	
Q20	-0.005	-0.024	-0.083	0.236	1.000
Q21	0.028	0.150	0.202	-0.297	-0.036
Q22	0.079	0.035	0.147	0.243	-0.002
Q23	-0.013	0.003	0.021	0.105	0.323
Q24	0.101	0.110	0.093	0.026	-0.077
Q25	0.121	0.193	0.175	0.055	-0.022
Q26	-0.103	-0.063	-0.119	0.088	-0.021
Q27	0.031	0.074	0.054	0.085	0.058
Q28	0.093	0.108	-0.148	0.065	0.101
Q29	0.095	-0.017	0.001	0.004	0.057
Q30	-0.109	-0.094	-0.191	-0.052	-0.053
Q31	-0.166	-0.043	-0.112	0.093	-0.047
Q32	-0.214	-0.082	-0.071	0.066	-0.096
Q33	-0.038	0.078	0.140	0.033	-0.048
Q34	-0.117	-0.065	-0.046	-0.008	-0.140
Q35	0.023	0.131	0.201	0.095	-0.002
Q36	-0.052	-0.029	-0.180	-0.062	0.044
Q37	0.013	-0.097	-0.228	0.051	0.030
Q38	.	.	.	.	.
Q39	-0.000	0.019	-0.372	-0.035	0.084
Q40	-0.171	-0.106	-0.233	0.078	-0.048

	Q21	Q22	Q23	Q24	Q25
Q21	1.000				
Q22	-0.161	1.000			
Q23	-0.107	0.161	1.000		
Q24	0.131	0.030	0.044	1.000	
Q25	0.126	-0.047	0.352	0.185	1.000
Q26	0.011	-0.035	0.126	-0.093	0.042
Q27	0.041	0.090	0.002	0.082	0.093
Q28	-0.087	-0.056	0.172	0.045	-0.086
Q29	0.177	-0.138	0.140	0.221	0.058
Q30	-0.144	0.052	-0.035	-0.146	-0.087
Q31	-0.011	0.085	-0.032	-0.150	-0.026
Q32	0.082	0.061	-0.029	-0.157	0.002
Q33	0.114	0.050	0.035	-0.092	-0.061
Q34	0.134	0.084	0.133	-0.014	0.130
Q35	0.096	0.107	0.033	-0.087	0.038
Q36	-0.071	-0.114	-0.004	0.032	0.053
Q37	0.010	0.063	0.125	-0.067	0.179
Q38	.	.	.	.	.

Q39	-0.081	-0.382	0.111	-0.055	0.003
Q40	-0.038	-0.081	0.027	0.066	-0.045

	Q26	Q27	Q28	Q29	Q30
Q26	1.000				
Q27	0.319	1.000			
Q28	0.199	0.160	1.000		
Q29	0.053	0.055	-0.017	1.000	
Q30	0.262	0.259	0.024	0.125	1.000
Q31	0.530	0.247	0.241	0.100	0.575
Q32	0.566	0.222	0.222	0.091	0.524
Q33	0.218	0.063	0.119	0.077	0.248
Q34	0.239	0.260	0.161	0.160	0.426
Q35	0.245	0.150	0.173	0.018	0.324
Q36	0.169	0.150	-0.105	0.251	0.276
Q37	0.091	0.152	-0.051	-0.143	0.182
Q38	.	.	.	.	.
Q39	0.143	0.249	0.266	0.122	0.184
Q40	0.011	-0.027	0.077	0.013	0.132

	Q31	Q32	Q33	Q34	Q35
Q31	1.000				
Q32	0.961	1.000			
Q33	0.502	0.487	1.000		
Q34	0.472	0.466	0.266	1.000	
Q35	0.444	0.433	0.684	0.296	1.000
Q36	0.342	0.314	0.202	0.342	0.008
Q37	0.172	0.156	-0.024	0.363	-0.024
Q38	.	.	.	.	.
Q39	0.244	0.227	-0.043	0.126	-0.066
Q40	0.156	0.134	0.201	0.067	0.092

	Q36	Q37	Q38	Q39	Q40
Q36	1.000				
Q37	0.245	1.000			
Q38	.	.	.		
Q39	0.326	0.226	.	1.000	
Q40	0.231	-0.005	.	0.144	1.000

APPENDIX H

FREQUENCY TABLE

	Q1	Q2	Q3	Q4	Q5
Q1	151				
Q2	144	144			
Q3	143	143	143		
Q4	142	142	141	142	
Q5	123	123	123	122	123
Q6	144	144	143	142	123
Q7	150	144	143	142	123
Q8	77	77	77	77	70
Q9	75	75	75	75	68
Q10	151	144	143	142	123
Q11	65	65	65	65	60
Q12	121	116	115	114	100
Q13	116	111	110	109	95
Q14	127	122	121	120	106
Q15	127	122	121	120	106
Q16	120	115	114	113	99
Q17	118	113	112	111	97
Q18	64	60	60	58	53
Q19	127	122	121	120	106
Q20	126	121	120	119	105
Q21	126	121	120	119	105
Q22	127	122	121	120	106
Q23	127	122	121	120	106
Q24	127	122	121	120	106
Q25	127	122	121	120	106
Q26	127	122	121	120	106
Q27	126	121	120	119	106
Q28	127	122	121	120	106
Q29	116	111	111	109	98
Q30	150	144	143	142	123
Q31	151	144	143	142	123
Q32	151	144	143	142	123
Q33	151	144	143	142	123
Q34	151	144	143	142	123
Q35	151	144	143	142	123
Q36	151	144	143	142	123
Q37	126	121	120	119	105
Q38	148	141	140	140	121
Q39	151	144	143	142	123
Q40	151	144	143	142	123

	Q6	Q7	Q8	Q9	Q10
Q6	144				
Q7	144	150			
Q8	77	77	77		
Q9	75	75	75	75	
Q10	144	150	77	75	151
Q11	65	65	65	65	65
Q12	116	121	65	63	121
Q13	111	116	60	58	116
Q14	122	127	68	66	127
Q15	122	127	68	66	127
Q16	115	120	65	63	120
Q17	113	118	64	62	118
Q18	60	64	33	32	64
Q19	122	127	68	66	127
Q20	121	126	67	65	126
Q21	121	126	67	65	126
Q22	122	127	68	66	127
Q23	122	127	68	66	127
Q24	122	127	68	66	127
Q25	122	127	68	66	127
Q26	122	127	68	66	127
Q27	121	126	68	66	126
Q28	122	127	68	66	127
Q29	111	116	61	60	116
Q30	144	149	77	75	150
Q31	144	150	77	75	151
Q32	144	150	77	75	151
Q33	144	150	77	75	151
Q34	144	150	77	75	151
Q35	144	150	77	75	151
Q36	144	150	77	75	151
Q37	121	125	68	66	126
Q38	141	147	77	75	148
Q39	144	150	77	75	151
Q40	144	150	77	75	151

	Q11	Q12	Q13	Q14	Q15
Q11	65				
Q12	62	121			
Q13	58	110	116		
Q14	65	121	116	127	
Q15	65	121	116	127	127
Q16	62	118	109	120	120
Q17	61	118	107	118	118
Q18	32	58	64	64	64
Q19	65	121	116	127	127
Q20	64	120	115	126	126
Q21	64	120	115	126	126
Q22	65	121	116	127	127
Q23	65	121	116	127	127
Q24	65	121	116	127	127
Q25	65	121	116	127	127
Q26	65	121	116	127	127
Q27	65	120	115	126	126
Q28	65	121	116	127	127
Q29	59	108	104	114	114
Q30	65	121	116	127	127
Q31	65	121	116	127	127
Q32	65	121	116	127	127
Q33	65	121	116	127	127
Q34	65	121	116	127	127
Q35	65	121	116	127	127
Q36	65	121	116	127	127
Q37	56	96	93	102	102
Q38	65	118	113	124	124
Q39	65	121	116	127	127
Q40	65	121	116	127	127

	Q16	Q17	Q18	Q19	Q20
Q16	120				
Q17	118	118			
Q18	57	55	64		
Q19	120	118	64	127	
Q20	119	117	63	126	126
Q21	119	117	63	126	126
Q22	120	118	64	127	126
Q23	120	118	64	127	126
Q24	120	118	64	127	126
Q25	120	118	64	127	126
Q26	120	118	64	127	126
Q27	119	117	63	126	125
Q28	120	118	64	127	126

Q29	107	105	58	114	113
Q30	120	118	64	127	126
Q31	120	118	64	127	126
Q32	120	118	64	127	126
Q33	120	118	64	127	126
Q34	120	118	64	127	126
Q35	120	118	64	127	126
Q36	120	118	64	127	126
Q37	95	93	51	102	101
Q38	117	115	61	124	123
Q39	120	118	64	127	126
Q40	120	118	64	127	126

	Q21	Q22	Q23	Q24	Q25
Q21	126				
Q22	126	127			
Q23	126	127	127		
Q24	126	127	127	127	
Q25	126	127	127	127	127
Q26	126	127	127	127	127
Q27	125	126	126	126	126
Q28	126	127	127	127	127
Q29	113	114	114	114	114
Q30	126	127	127	127	127
Q31	126	127	127	127	127
Q32	126	127	127	127	127
Q33	126	127	127	127	127
Q34	126	127	127	127	127
Q35	126	127	127	127	127
Q36	126	127	127	127	127
Q37	101	102	102	102	102
Q38	123	124	124	124	124
Q39	126	127	127	127	127
Q40	126	127	127	127	127

	Q26	Q27	Q28	Q29	Q30
Q26	127				
Q27	126	126			
Q28	127	126	127		
Q29	114	113	114	116	
Q30	127	126	127	116	150
Q31	127	126	127	116	150
Q32	127	126	127	116	150
Q33	127	126	127	116	150
Q34	127	126	127	116	150
Q35	127	126	127	116	150

Q36	127	126	127	116	150
Q37	102	101	102	98	125
Q38	124	124	124	113	147
Q39	127	126	127	116	150
Q40	127	126	127	116	150

	Q31	Q32	Q33	Q34	Q35
Q31	151				
Q32	151	151			
Q33	151	151	151		
Q34	151	151	151	151	
Q35	151	151	151	151	151
Q36	151	151	151	151	151
Q37	126	126	126	126	126
Q38	148	148	148	148	148
Q39	151	151	151	151	151
Q40	151	151	151	151	151

	Q36	Q37	Q38	Q39	Q40
Q36	151				
Q37	126	126			
Q38	148	124	148		
Q39	151	126	148	151	
Q40	151	126	148	151	151

APPENDIX I

THE FOLLOWING RESULTS ARE FOR:

GRP$ = AFTER

TOTAL OBSERVATIONS: 79

	Q1	Q2	Q3	Q4	Q5
N OF CASES	79	73	73	72	63
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.658	0.315	0.671	1.042	0.540
VARIANCE	0.382	0.358	0.585	0.181	0.543
STANDARD DEV	0.618	0.598	0.765	0.426	0.737
MEDIAN	2.000	0.000	0.000	1.000	0.000

	Q6	Q7	Q8	Q9	Q10
N OF CASES	73	79	33	32	79
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	0.849	0.785	1.364	1.875	1.962
VARIANCE	0.158	0.940	0.676	0.177	0.063
STANDARD DEV	0.397	0.970	0.822	0.421	0.250
MEDIAN	1.000	0.000	2.000	2.000	2.000

	Q11	Q12	Q13	Q14	Q15
N OF CASES	31	75	67	78	78
MINIMUM	0.000	0.000	0.000	1.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.032	0.520	0.970	1.987	1.859
VARIANCE	0.766	0.766	0.878	0.013	0.175
STANDARD DEV	0.875	0.875	0.937	0.113	0.418
MEDIAN	1.000	0.000	1.000	2.000	2.000

	Q16	Q17	Q18	Q19	Q20
N OF CASES	75	73	38	78	78
MINIMUM	0.000	0.000	0.000	1.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.400	1.411	1.237	1.987	1.654
VARIANCE	0.676	0.523	0.834	0.013	0.463
STANDARD DEV	0.822	0.723	0.913	0.113	0.680
MEDIAN	2.000	2.000	2.000	2.000	2.000

	Q21	Q22	Q23	Q24	Q25
N OF CASES	78	78	78	78	78
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	1.000	2.000
MEAN	0.064	1.949	1.526	0.013	0.410
VARIANCE	0.087	0.075	0.512	0.013	0.323
STANDARD DEV	0.295	0.274	0.716	0.113	0.568
MEDIAN	0.000	2.000	2.000	0.000	0.000

	Q26	Q27	Q28	Q29	Q30
N OF CASES	78	77	78	69	78
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.192	0.429	0.256	0.304	1.603
VARIANCE	0.625	0.564	0.349	0.303	0.398
STANDARD DEV	0.790	0.751	0.591	0.551	0.631
MEDIAN	1.000	0.000	0.000	0.000	2.000

	Q31	Q32	Q33	Q34	Q35
N OF CASES	79	79	79	79	79
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	1.000	2.000
MEAN	1.494	1.570	0.456	0.494	0.367
VARIANCE	0.663	0.582	0.328	0.253	0.261
STANDARD DEV	0.815	0.763	0.573	0.503	0.511
MEDIAN	2.000	2.000	0.000	0.000	0.000

	Q36	Q37	Q38	Q39	Q40
N OF CASES	79	58	76	79	79
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	1.000	0.000	2.000	1.000
MEAN	0.316	0.155	0.000	0.177	0.241
VARIANCE	0.219	0.133	0.000	0.173	0.185
STANDARD DEV	0.468	0.365	0.000	0.416	0.430
MEDIAN	0.000	0.000	0.000	0.000	0.000

THE FOLLOWING RESULTS ARE FOR GRP$ = BEFORE

TOTAL OBSERVATIONS: 72

	Q1	Q2	Q3	Q4	Q5
N OF CASES	72	71	70	70	60
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	1.000
MEAN	1.917	0.296	0.171	1.043	0.033
VARIANCE	0.106	0.268	0.231	0.129	0.033
STANDARD DEV	0.325	0.518	0.481	0.359	0.181
MEDIAN	2.000	0.000	0.000	1.000	0.000

	Q6	Q7	Q8	Q9	Q10
N OF CASES	71	71	44	43	72
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	2.000	2.000	2.000	2.000
MEAN	0.606	1.197	1.023	1.791	1.361
VARIANCE	0.242	0.961	0.674	0.217	0.882
STANDARD DEV	0.492	0.980	0.821	0.466	0.939
MEDIAN	1.000	2.000	1.000	2.000	2.000

	Q11	Q12	Q13	Q14	Q15
N OF CASES	34	46	49	49	49
MINIMUM	0.000	0.000	0.000	2.000	0.000
MAXIMUM	2.000	0.000	2.000	2.000	2.000
MEAN	1.706	0.000	0.959	2.000	1.735
VARIANCE	0.396	0.000	0.998	0.000	0.324
STANDARD DEV	0.629	0.000	0.999	0.000	0.569
MEDIAN	2.000	0.000	0.000	2.000	2.000

	Q16	Q17	Q18	Q19	Q20
N OF CASES	45	45	26	49	48
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.756	1.733	1.423	1.918	1.667
VARIANCE	0.280	0.336	0.574	0.118	0.397
STANDARD DEV	0.529	0.580	0.758	0.344	0.630
MEDIAN	2.000	2.000	2.000	2.000	2.000

	Q21	Q22	Q23	Q24	Q25
N OF CASES	48	49	49	49	49
MINIMUM	0.000	1.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	1.000	1.000
MEAN	0.083	1.959	1.347	0.041	0.306
VARIANCE	0.121	0.040	0.606	0.040	0.217
STANDARD DEV	0.347	0.200	0.779	0.200	0.466
MEDIAN	0.000	2.000	2.000	0.000	0.000

	Q26	Q27	Q28	Q29	Q30
N OF CASES	49	49	49	47	72
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	1.000	2.000	2.000
MEAN	0.286	0.163	0.082	0.191	0.819
VARIANCE	0.417	0.181	0.077	0.289	0.629
STANDARD DEV	0.645	0.426	0.277	0.537	0.793
MEDIAN	0.000	0.000	0.000	0.000	1.000

	Q31	Q32	Q33	Q34	Q35
N OF CASES	72	72	72	72	72
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	0.000	1.000	1.000	1.000	1.000
MEAN	0.000	0.014	0.028	0.125	0.042
VARIANCE	0.000	0.014	0.027	0.111	0.040
STANDARD DEV	0.000	0.118	0.165	0.333	0.201
MEDIAN	0.000	0.000	0.000	0.000	0.000

	Q36	Q37	Q38	Q39	Q40
N OF CASES	72	68	72	72	72
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	1.000	0.000	1.000	1.000
MEAN	0.097	0.059	0.000	0.028	0.056
VARIANCE	0.089	0.056	0.000	0.027	0.053
STANDARD DEV	0.298	0.237	0.000	0.165	0.231
MEDIAN	0.000	0.000	0.000	0.000	0.000

APPENDIX J

THE FOLLOWING RESULTS ARE FOR:

GROUP$ = GENERAL AFTER

TOTAL OBSERVATIONS: 37

	Q1	Q2	Q3	Q4	Q5
N OF CASES	37	37	37	37	32
MINIMUM	1.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.892	0.324	1.000	1.081	0.875
VARIANCE	0.099	0.392	0.556	0.243	0.629
STANDARD DEV	0.315	0.626	0.745	0.493	0.793
MEDIAN	2.000	0.000	1.000	1.000	1.000

	Q6	Q7	Q8	Q9	Q10
N OF CASES	37	37	16	16	37
MINIMUM	0.000	0.000	0.000	1.000	2.000
MAXIMUM	1.000	2.000	2.000	2.000	2.000
MEAN	0.892	0.865	1.063	1.938	2.000
VARIANCE	0.099	1.009	0.996	0.063	0.000
STANDARD DEV	0.315	1.004	0.998	0.250	0.000
MEDIAN	1.000	0.000	1.500	2.000	2.000

	Q11	Q12	Q13	Q14	Q15
N OF CASES	16	36	34	37	37
MINIMUM	0.000	0.000	0.000	2.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.188	0.194	0.941	2.000	1.811
VARIANCE	0.696	0.333	0.845	0.000	0.213
STANDARD DEV	0.834	0.577	0.919	0.000	0.462
MEDIAN	1.000	0.000	1.000	2.000	2.000

	Q16	Q17	Q18	Q19	Q20
N OF CASES	34	34	20	37	37
MINIMUM	0.000	0.000	0.000	1.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.294	1.265	1.200	1.973	1.730
VARIANCE	0.699	0.625	0.905	0.027	0.369
STANDARD DEV	0.836	0.790	0.951	0.164	0.608
MEDIAN	2.000	1.000	2.000	2.000	2.000

	Q21	Q22	Q23	Q24	Q25
N OF CASES	37	37	37	37	37
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	2.000	2.000	1.000	2.000
MEAN	0.054	1.892	1.541	0.027	0.486
VARIANCE	0.053	0.155	0.477	0.027	0.368
STANDARD DEV	0.229	0.393	0.691	0.164	0.607
MEDIAN	0.000	2.000	2.000	0.000	0.000

	Q26	Q27	Q28	Q29	Q30
N OF CASES	37	36	37	32	37
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	1.000	2.000	2.000
MEAN	1.162	0.333	0.054	0.375	1.676
VARIANCE	0.695	0.400	0.053	0.371	0.336
STANDARD DEV	0.834	0.632	0.229	0.609	0.580
MEDIAN	1.000	0.000	0.000	0.000	2.000

	Q31	Q32	Q33	Q34	Q35
N OF CASES	37	37	37	37	37
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	1.000	1.000
MEAN	1.459	1.568	0.351	0.595	0.189
VARIANCE	0.700	0.586	0.290	0.248	0.158
STANDARD DEV	0.836	0.765	0.538	0.498	0.397
MEDIAN	2.000	2.000	0.000	1.000	0.000

	Q36	Q37	Q38	Q39	Q40
N OF CASES	37	27	35	37	37
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	1.000	0.000	2.000	1.000
MEAN	0.568	0.259	0.000	0.270	0.270
VARIANCE	0.252	0.199	0.000	0.258	0.203
STANDARD DEV	0.502	0.447	0.000	0.508	0.450
MEDIAN	1.000	0.000	0.000	0.000	0.000

THE FOLLOWING RESULTS ARE FOR:

GROUP$ = GENERAL BEFORE

TOTAL OBSERVATIONS: 36

	Q1	Q2	Q3	Q4	Q5
N OF CASES	36	36	36	36	34
MINIMUM	1.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	1.000	1.000	1.000
MEAN	1.972	0.278	0.111	0.972	0.029
VARIANCE	0.028	0.263	0.102	0.028	0.029
STANDARD DEV	0.167	0.513	0.319	0.167	0.171
MEDIAN	2.000	0.000	0.000	1.000	0.000

	Q6	Q7	Q8	Q9	Q10
N OF CASES	36	36	35	34	36
MINIMUM	0.000	0.000	0.000	1.000	0.000
MAXIMUM	1.000	2.000	2.000	2.000	2.000
MEAN	0.750	1.861	0.857	1.824	1.722
VARIANCE	0.193	0.237	0.655	0.150	0.492
STANDARD DEV	0.439	0.487	0.810	0.387	0.701
MEDIAN	1.000	2.000	1.000	2.000	2.000

	Q11	Q12	Q13	Q14	Q15
N OF CASES	29	29	31	31	31
MINIMUM	0.000	0.000	0.000	2.000	0.000
MAXIMUM	2.000	0.000	2.000	2.000	2.000
MEAN	1.828	0.000	0.871	2.000	1.774
VARIANCE	0.219	0.000	0.983	0.000	0.247
STANDARD DEV	0.468	0.000	0.991	0.000	0.497
MEDIAN	2.000	0.000	0.000	2.000	2.000

	Q16	Q17	Q18	Q19	Q20
N OF CASES	29	29	16	31	30
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.690	1.655	1.500	1.903	1.800
VARIANCE	0.365	0.448	0.667	0.157	0.303
STANDARD DEV	0.604	0.670	0.816	0.396	0.551
MEDIAN	2.000	2.000	2.000	2.000	2.000

	Q21	Q22	Q23	Q24	Q25
N OF CASES	30	31	31	31	31
MINIMUM	0.000	1.000	0.000	0.000	0.000
MAXIMUM	1.000	2.000	2.000	1.000	1.000
MEAN	0.067	1.968	1.419	0.065	0.290
VARIANCE	0.064	0.032	0.518	0.062	0.213
STANDARD DEV	0.254	0.180	0.720	0.250	0.461
MEDIAN	0.000	2.000	2.000	0.000	0.000

	Q26	Q27	Q28	Q29	Q30
N OF CASES	31	31	31	28	36
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	1.000	2.000	2.000
MEAN	0.323	0.194	0.032	0.250	1.028
VARIANCE	0.492	0.228	0.032	0.417	0.599
STANDARD DEV	0.702	0.477	0.180	0.645	0.774
MEDIAN	0.000	0.000	0.000	0.000	1.000

	Q31	Q32	Q33	Q34	Q35
N OF CASES	36	36	36	36	36
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	0.000	0.000	0.000	1.000	1.000
MEAN	0.000	0.000	0.000	0.139	0.028
VARIANCE	0.000	0.000	0.000	0.123	0.028
STANDARD DEV	0.000	0.000	0.000	0.351	0.167
MEDIAN	0.000	0.000	0.000	0.000	0.000

	Q36	Q37	Q38	Q39	Q40
N OF CASES	36	34	36	36	36
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	1.000	0.000	1.000	0.000
MEAN	0.111	0.118	0.000	0.028	0.000
VARIANCE	0.102	0.107	0.000	0.028	0.000
STANDARD DEV	0.319	0.327	0.000	0.167	0.000
MEDIAN	0.000	0.000	0.000	0.000	0.000

THE FOLLOWING RESULTS ARE FOR:

GROUP$ = HENDERSON AFTER

TOTAL OBSERVATIONS: 42

	Q1	Q2	Q3	Q4	Q5
N OF CASES	42	36	36	35	31
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.452	0.306	0.333	1.000	0.194
VARIANCE	0.546	0.333	0.400	0.118	0.228
STANDARD DEV	0.739	0.577	0.632	0.343	0.477
MEDIAN	2.000	0.000	0.000	1.000	0.000

	Q6	Q7	Q8	Q9	Q10
N OF CASES	36	42	17	16	42
MINIMUM	0.000	0.000	1.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	0.806	0.714	1.647	1.813	1.929
VARIANCE	0.218	0.892	0.243	0.296	0.117
STANDARD DEV	0.467	0.944	0.493	0.544	0.342
MEDIAN	1.000	0.000	2.000	2.000	2.000

	Q11	Q12	Q13	Q14	Q15
N OF CASES	15	39	33	41	41
MINIMUM	0.000	0.000	0.000	1.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	0.867	0.821	1.000	1.976	1.902
VARIANCE	0.838	0.993	0.938	0.024	0.140
STANDARD DEV	0.915	0.997	0.968	0.156	0.374
MEDIAN	1.000	0.000	1.000	2.000	2.000

	Q16	Q17	Q18	Q19	Q20
N OF CASES	41	39	18	41	41
MINIMUM	0.000	0.000	0.000	2.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.488	1.538	1.278	2.000	1.585
VARIANCE	0.656	0.413	0.801	0.000	0.549
STANDARD DEV	0.810	0.643	0.895	0.000	0.741
MEDIAN	2.000	2.000	2.000	2.000	2.000

	Q21	Q22	Q23	Q24	Q25
N OF CASES	41	41	41	41	41
MINIMUM	0.000	2.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	0.000	2.000
MEAN	0.073	2.000	1.512	0.000	0.341
VARIANCE	0.120	0.000	0.556	0.000	0.280
STANDARD DEV	0.346	0.000	0.746	0.000	0.530
MEDIAN	0.000	2.000	2.000	0.000	0.000

	Q26	Q27	Q28	Q29	Q30
N OF CASES	41	41	41	37	41
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.220	0.512	0.439	0.243	1.537
VARIANCE	0.576	0.706	0.552	0.245	0.455
STANDARD DEV	0.759	0.840	0.743	0.495	0.674
MEDIAN	1.000	0.000	0.000	0.000	2.000

	Q31	Q32	Q33	Q34	Q35
N OF CASES	42	42	42	42	42
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	1.000	2.000
MEAN	1.524	1.571	0.548	0.405	0.524
VARIANCE	0.646	0.592	0.351	0.247	0.304
STANDARD DEV	0.804	0.770	0.593	0.497	0.552
MEDIAN	2.000	2.000	0.500	0.000	0.500

	Q36	Q37	Q38	Q39	Q40
N OF CASES	42	31	41	42	42
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	1.000	0.000	1.000	1.000
MEAN	0.095	0.065	0.000	0.095	0.214
VARIANCE	0.088	0.062	0.000	0.088	0.172
STANDARD DEV	0.297	0.250	0.000	0.297	0.415
MEDIAN	0.000	0.000	0.000	0.000	0.000

THE FOLLOWING RESULTS ARE FOR:

GROUP$ = HENDERSON BEFORE

TOTAL OBSERVATIONS: 36

	Q1	Q2	Q3	Q4	Q5
N OF CASES	36	35	34	34	26
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	1.000
MEAN	1.861	0.314	0.235	1.118	0.038
VARIANCE	0.180	0.281	0.367	0.228	0.038
STANDARD DEV	0.424	0.530	0.606	0.478	0.196
MEDIAN	2.000	0.000	0.000	1.000	0.000

	Q6	Q7	Q8	Q9	Q10
N OF CASES	35	35	9	9	36
MINIMUM	0.000	0.000	1.000	0.000	0.000
MAXIMUM	1.000	2.000	2.000	2.000	2.000
MEAN	0.457	0.514	1.667	1.667	1.000
VARIANCE	0.255	0.787	0.250	0.500	1.029
STANDARD DEV	0.505	0.887	0.500	0.707	1.014
MEDIAN	0.000	0.000	2.000	2.000	1.000

	Q11	Q12	Q13	Q14	Q15
N OF CASES	5	17	18	18	18
MINIMUM	0.000	0.000	0.000	2.000	0.000
MAXIMUM	2.000	0.000	2.000	2.000	2.000
MEAN	1.000	0.000	1.111	2.000	1.667
VARIANCE	1.000	0.000	1.046	0.000	0.471
STANDARD DEV	1.000	0.000	1.023	0.000	0.686
MEDIAN	1.000	0.000	2.000	2.000	2.000

	Q16	Q17	Q18	Q19	Q20
N OF CASES	16	16	10	18	18
MINIMUM	1.000	1.000	0.000	1.000	0.000
MAXIMUM	2.000	2.000	2.000	2.000	2.000
MEAN	1.875	1.875	1.300	1.944	1.444
VARIANCE	0.117	0.117	0.456	0.056	0.497
STANDARD DEV	0.342	0.342	0.675	0.236	0.705
MEDIAN	2.000	2.000	1.000	2.000	2.000

	Q21	Q22	Q23	Q24	Q25
N OF CASES	18	18	18	18	18
MINIMUM	0.000	1.000	0.000	0.000	0.000
MAXIMUM	2.000	2.000	2.000	0.000	1.000
MEAN	0.111	1.944	1.222	0.000	0.333
VARIANCE	0.222	0.056	0.771	0.000	0.235
STANDARD DEV	0.471	0.236	0.878	0.000	0.485
MEDIAN	0.000	2.000	1.500	0.000	0.000

	Q26	Q27	Q28	Q29	Q30
N OF CASES	18	18	18	19	36
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	2.000	1.000	1.000	1.000	2.000
MEAN	0.222	0.111	0.167	0.105	0.611
VARIANCE	0.301	0.105	0.147	0.099	0.587
STANDARD DEV	0.548	0.323	0.383	0.315	0.766
MEDIAN	0.000	0.000	0.000	0.000	0.000

	Q31	Q32	Q33	Q34	Q35
N OF CASES	36	36	36	36	36
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	0.000	1.000	1.000	1.000	1.000
MEAN	0.000	0.028	0.056	0.111	0.056
VARIANCE	0.000	0.028	0.054	0.102	0.054
STANDARD DEV	0.000	0.167	0.232	0.319	0.232
MEDIAN	0.000	0.000	0.000	0.000	0.000

	Q36	Q37	Q38	Q39	Q40
N OF CASES	36	34	36	36	36
MINIMUM	0.000	0.000	0.000	0.000	0.000
MAXIMUM	1.000	0.000	0.000	1.000	1.000
MEAN	0.083	0.000	0.000	0.028	0.111
VARIANCE	0.079	0.000	0.000	0.028	0.102
STANDARD DEV	0.280	0.000	0.000	0.167	0.319
MEDIAN	0.000	0.000	0.000	0.000	0.000